# 504461780 07/18/2017

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT4508481

		NEW ASSIGNMENT		
NATURE OF CONVEYAN	CE:	ASSIGNMENT		
CONVEYING PARTY DA	TA			
		Name	Execution Date	
PENG YANG			07/14/2017	
RAVI S. ARVAPALLY			07/10/2017	
WALLY F. LO FARO			07/10/2017	
KAMALESH V. RAO			07/18/2017	
RECEIVING PARTY DAT	۲A			
Name:	MASTEF	CARD INTERNATIONAL INCORPOR	ATED	
Street Address:	2000 PU	RCHASE STREET		
City:	PURCHA	ASE		
State/Country:	NEW YO	PRK		
Postal Code:	10577			
PROPERTY NUMBERS	Total: 1	Number		
	1	5652533		
Application Number:				
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#### WHEREAS, WE,

Peng YANG, a citizen of the China, having a residence address at 1324 Wouldhridge Crossing Drive, Chesternetd, WILLSING, 730 E Evelyn Ave Apt 232, Sunny vale, CA 94086 Ravi S. ARVAPALLY, a citizen of the India, having a residence address at 10105 Applerock Drive, O'Fallon, MO 63368,

Wally F. LO FARO, a citizen of the United States of America, having a residence address at 14392 Tealcrest Dr., Chesterfield, MO 63017 and

Kamalesh V. RAO, a citizen of the United States of America, having a residence address at 34-20 74th Street, Apt 6E, Jackson Heights, NY 11372,

(hereinafter "Assignor"), have made an invention entitled "SYSTEM AND METHOD FOR DETERMINING POPULATION MOVEMENT" as set forth and described in U.S. Application No. \_\_\_\_\_\_, filed \_\_\_\_\_\_; International Application No. \_\_\_\_\_\_, filed \_\_\_\_\_\_; United States Provisional Application No. \_\_\_\_\_\_\_, filed \_\_\_\_\_\_; and

WHEREAS, MASTERCARD INTERNATIONAL INCORPORATED, having its principal place of business at 2000 Purchase Street, Purchase, NY 10577, hereinafter referred to as Assignee, is desirous of acquiring the whole right, title and interest therein:

NOW, THEREFORE, for good and valuable consideration, the receipt and adequacy whereof is hereby acknowledged. Assignor hereby confirms any prior assignment to Assignee, and to the extent that Assignor has not already done so, agrees to assign, and hereby does, sell, assign and transfer unto Assignee and its successors in interest, the full and exclusive right, title and interest in the United States of America and throughout the world, including the right to claim priority under the laws of the United States, the Paris Convention, and any foreign countries, to the inventions as described in the aforesaid application, to the aforesaid application itself, and all divisions, continuations, continuations-in-part, or other applications claiming priority directly or indirectly from the aforesaid application, and any United States or foreign Letters Patent, utility model, or other similar rights which may be granted thereon, including reissues, reexaminations and extensions thereof, and all copyright rights throughout the world in the aforesaid application and the subject matter disclosed therein, these rights, title and interest to be held and enjoyed by Assignee to the full end of the term for which the Letters Patent, utility model, or other similar rights, are granted and any extensions thereof as fully and entirely as the same would have been held by Assignor had this assignment and sale not been made, and the right to sue for, and recover for past infringements of, or liabilities for, any of the rights relating to any of the applications, patents, utility models, or other similar rights, resulting therefrom, and the copyright rights.

Assignor hereby covenants and agrees to execute all instruments or documents required or requested for the making and prosecution of any applications of any type for patent, utility model, or other similar rights, and for copyright, in the United States and in all foreign countries including, but not limited to, any provisional, continuation, continuation-in-part, divisional, renewal or substitute thereof, any derivation proceedings relating thereto, and as to Letters Patent

## PATENT REEL: 043034 FRAME: 0030

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any supplemental examination, derivation proceeding, opposition, post grant review, reissue, reexamination, inter partes review, or extension thereof, and for litigation regarding, or for the purpose of defending the validity of or protecting title to the said invention, the United States application for patent, or Letters Patent therefor, and to testify in support thereof, for the benefit of Assignce and its successors in interest without further or other compensation than that above set forth.

Assignor hereby covenants that no assignment, sale, license, agreement or encumbrance has been or will be entered into which would conflict with this Assignment. Assignor further covenants not to challenge, or assist or participate in any third party challenge to, the assigned inventions, or any patent application or patent thereon, whether by litigation, post grant review, inter partes review, covered business method review, reexamination, or otherwise.

Assignor hereby requests the United States Patent and Trademark Office to issue the Letters Patent of the United States of America to Assignee, and requests that any official of any country or countries foreign to the United States, whose duty it is to issue or grant patents and applications as aforesaid, to issue the Letters Patent, Utility Model Registration or other similar right to Assignee.

The undersigned hereby authorize the attorneys of **Ohlandt**, Greeley, Ruggiero & **Perle**, L.L.P. the power to insert in the spaces provided above the title of the invention, filing date, application number, and attorney's docket number of said application when known.

IN WITNESS WHEREOF, I, the said ASSIGNOR have executed this Assignment this  $14^{14}$  day of Jaly, 2017.

Witness Signature

Juan L

Witness Name

IN WITNESS WHEREOF, I, the said ASSIGNOR have executed this Assignment this \_\_\_\_\_\_ day of \_\_\_\_\_\_, 201\_\_\_\_.

#### Ravi S. ARVAPALLY

-2-

Witness Signature

Witness Name

IN WITNESS WHEREOF, I, the said ASSIGNOR have executed this Assignment this \_\_\_\_\_\_ day of \_\_\_\_\_\_, 201 \_\_\_\_.

Wally F. LO FARO

Witness Signature

Witness Name

IN WITNESS WHEREOF, I, the said ASSIGNOR have executed this Assignment this \_\_\_\_\_\_ day of \_\_\_\_\_\_. 201\_\_\_\_.

Kamalesh V. RAO

Witness Signature

Witness Name

## PATENT REEL: 043034 FRAME: 0032

-3-

Agreed and accepted this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_,

## MASTERCARD INTERNATIONAL INCORPORATED

By:\_\_\_\_\_

Title;

#### WHEREAS, WE,

Peng YANG, a citizen of the China, having a residence address at 1324 Woodbridge Crossing Drive, Chesterfield, MO 63005,

Ravi S. ARVAPALLY, a citizen of the India, having a residence address at 10105 Applerock Drive, O'Fallon, MO 63368,

Wally F. LO FARO, a citizen of the United States of America, having a residence address at 14392 Tealcrest Dr., Chesterfield, MO 63017 and

Kamalesh V. RAO, a citizen of the United States of America, having a residence address at 34-20 74th Street, Apt 6E, Jackson Heights, NY 11372,

(hereinafter "Assignor"), hay	ve made an invention entitled "SYSTEM AND METHOD FOR				
<b>DETERMINING POPULATION MOVEMENT</b> " as set forth and described in U.S.					
Application No.	, filed ; International Application No.				
, filed	; United States Provisional Application No.				
, filed	; and				

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-1-

## P02557-US-UTIL 0010819USU/4450

any supplemental examination, derivation proceeding, opposition, post grant review, reissue, reexamination, inter partes review, or extension thereof, and for litigation regarding, or for the purpose of defending the validity of or protecting title to the said invention, the United States application for patent, or Letters Patent therefor, and to testify in support thereof, for the benefit of Assignee and its successors in interest without further or other compensation than that above set forth.

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IN WITNESS WHEREOF, I, the said ASSIGNOR have executed this Assignment this \_\_\_\_\_ day of \_\_\_\_\_\_, 201\_\_\_\_.

Peng YANG

Witness Signature

Witness Name

IN WITNESS WHEREOF, I, the said ASS	<b>IGNOR</b> have executed this Assignment this
10 day of $50LY$ , 201	17.
	A. V. LAM
	1 M TO

Ravi S. ARVAPALLY

P02557-US-UTIL 0010819USU/4450

S. My Witness Signature Meghana Santhapur Witness Name

IN WITNESS WHEREOF, I, the said ASSIGNOR have executed this Assignment this \_\_\_\_\_ day of \_\_\_\_\_, 201\_\_\_.

Wally F. LO FARO

Witness Signature

Witness Name

IN WITNESS WHEREOF, I, the said ASSIGNOR have executed this Assignment this \_day of \_\_\_\_\_, 201\_\_\_\_,

Kamalesh V. RAO

Witness Signature

Witness Name

-3-

Agreed and accepted this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_.

## MASTERCARD INTERNATIONAL INCORPORATED

By:\_\_\_\_\_

Title:\_\_\_\_\_

## PATENT REEL: 043034 FRAME: 0037

1

#### WHEREAS, WE,

Peng YANG, a citizen of the China, having a residence address at 1324 Woodbridge Crossing Drive, Chesterfield, MO 63005,

Ravi S. ARVAPALLY, a citizen of the India, having a residence address at 10105 Applerock Drive, O'Fallon, MO 63368,

Wally F. LO FARO, a citizen of the United States of America, having a residence address at 14392 Tealcrest Dr., Chesterfield, MO 63017 and

Kamalesh V. RAO, a citizen of the United States of America, having a residence address at 34-20 74th Street, Apt 6E, Jackson Heights, NY 11372,

(hereinafter "Assignor"), have made an invention entitled "SYSTEM AND METHOD FOR DETERMINING POPULATION MOVEMENT" as set forth and described in U.S. Application No. \_\_\_\_\_\_, filed \_\_\_\_\_\_; International Application No. \_\_\_\_\_\_, filed \_\_\_\_\_\_; United States Provisional Application No. \_\_\_\_\_\_, filed \_\_\_\_\_\_; and

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any supplemental examination, derivation proceeding, opposition, post grant review, reissue, reexamination, inter partes review, or extension thereof, and for litigation regarding, or for the purpose of defending the validity of or protecting title to the said invention, the United States application for patent, or Letters Patent therefor, and to testify in support thereof, for the benefit of Assignee and its successors in interest without further or other compensation than that above set forth.

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IN WITNESS WHEREOF, I, the said **ASSIGNOR** have executed this Assignment this \_\_\_\_\_\_ day of \_\_\_\_\_\_, 201\_\_\_\_.

Peng YANG

Witness Signature

Witness Name

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Ravi S. ARVAPALLY

### P02557-US-UTIL 0010819USU/4450

Witness Signature

Witness Name

IN WITNESS WHEREOF, I, the said ASSIGNOR have executed this Assignment this  $10^{1h}$  day of 5.14,  $201\overline{1}$ .

Willy 1 th

Wally F. LO FARO

Kimberly Pinkerton Witness Signature Kimberly Pinkerton Witness Name

IN WITNESS WHEREOF, I, the said ASSIGNOR have executed this Assignment this \_\_\_\_\_ day of \_\_\_\_\_, 201\_\_\_.

Kamalesh V. RAO

Witness Signature

Witness Name

Agreed and accepted this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

## MASTERCARD INTERNATIONAL INCORPORATED

By: \_\_\_\_\_

Title:

WHEREAS, WE,

**Peng YANG**, a citizen of the **China**, having a residence address at **1324 Woodbridge Crossing Drive**, **Chesterfield**, **MO 63005**,

Ravi S. ARVAPALLY, a citizen of the India, having a residence address at 10105 Applerock Drive, O'Fallon, MO 63368,

Wally F. LO FARO, a citizen of the United States of America, having a residence address at 14392 Tealcrest Dr., Chesterfield, MO 63017 and

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Peng YANG

Witness Signature

Witness Name

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Ravi S. ARVAPALLY

### P02557-US-UTHL 0010819USU/4450

Witness Signature

Witness Name

IN WITNESS WHERI OF, I, the said ASSIGNOR have executed this Assignment the 

Wally F. LO FARO

Wriness Signature

Winness Name

IN WITNESS WHEREOF. I, the said ASSIGNOR have executed this Assignment this  $18^{-1}$  day of  $36^{-1}$ ,  $2012^{-1}$ ,  $2012^{-1}$ 

Kamal

.3.

Winess Signature

Angela, Cheu Wilness Name

Agreed and accepted this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

## MASTERCARD INTERNATIONAL INCORPORATED

By: \_\_\_\_\_

Title:

WHEREAS, WE,

Peng YANG, a citizen of the China, having a residence address at 1324 Woodbridge Crossing Drive, Chesterfield, MO 63005,

Ravi S. ARVAPALLY, a citizen of the India, having a residence address at 10105 Applerock Drive, O'Fallon, MO 63368,

Wally F. LO FARO, a citizen of the United States of America, having a residence address at 14392 Tealcrest Dr., Chesterfield, MO 63017 and

Kamalesh V. RAO, a citizen of the United States of America, having a residence address at 34-20 74th Street, Apt 6E, Jackson Heights, NY 11372,

(hereinafter "Assignor"), have made an invention entitled "SYSTEM AND METHOD FOR DETERMINING POPULATION MOVEMENT" as set forth and described in U.S. Application No. \_\_\_\_\_\_, filed \_\_\_\_\_\_; International Application No. \_\_\_\_\_\_, filed \_\_\_\_\_\_; United States Provisional Application No. \_\_\_\_\_\_, filed \_\_\_\_\_\_; and

WHEREAS, MASTERCARD INTERNATIONAL INCORPORATED, having its principal place of business at 2000 Purchase Street, Purchase, NY 10577, hereinafter referred to as Assignee, is desirous of acquiring the whole right, title and interest therein:

NOW, THEREFORE, for good and valuable consideration, the receipt and adequacy whereof is hereby acknowledged, Assignor hereby confirms any prior assignment to Assignee, and to the extent that Assignor has not already done so, agrees to assign, and hereby does, sell, assign and transfer unto Assignee and its successors in interest, the full and exclusive right, title and interest in the United States of America and throughout the world, including the right to claim priority under the laws of the United States, the Paris Convention, and any foreign countries, to the inventions as described in the aforesaid application, to the aforesaid application itself, and all divisions, continuations, continuations-in-part, or other applications claiming priority directly or indirectly from the aforesaid application, and any United States or foreign Letters Patent, utility model, or other similar rights which may be granted thereon, including reissues, reexaminations and extensions thereof, and all copyright rights throughout the world in the aforesaid application and the subject matter disclosed therein, these rights, title and interest to be held and enjoyed by Assignee to the full end of the term for which the Letters Patent, utility model, or other similar rights, are granted and any extensions thereof as fully and entirely as the same would have been held by Assignor had this assignment and sale not been made, and the right to sue for, and recover for past infringements of, or liabilities for, any of the rights relating to any of the applications, patents, utility models, or other similar rights, resulting therefrom, and the copyright rights.

Assignor hereby covenants and agrees to execute all instruments or documents required or requested for the making and prosecution of any applications of any type for patent, utility model, or other similar rights, and for copyright, in the United States and in all foreign countries including, but not limited to, any provisional, continuation, continuation-in-part, divisional, renewal or substitute thereof, any derivation proceedings relating thereto, and as to Letters Patent

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any supplemental examination, derivation proceeding, opposition, post grant review, reissue, reexamination, inter partes review, or extension thereof, and for litigation regarding, or for the purpose of defending the validity of or protecting title to the said invention, the United States application for patent, or Letters Patent therefor, and to testify in support thereof, for the benefit of Assignee and its successors in interest without further or other compensation than that above set forth.

Assignor hereby covenants that no assignment, sale, license, agreement or encumbrance has been or will be entered into which would conflict with this Assignment. Assignor further covenants not to challenge, or assist or participate in any third party challenge to, the assigned inventions, or any patent application or patent thereon, whether by litigation, post grant review, inter partes review, covered business method review, reexamination, or otherwise.

Assignor hereby requests the United States Patent and Trademark Office to issue the Letters Patent of the United States of America to Assignee, and requests that any official of any country or countries foreign to the United States, whose duty it is to issue or grant patents and applications as aforesaid, to issue the Letters Patent, Utility Model Registration or other similar right to Assignee.

The undersigned hereby authorize the attorneys of **Ohlandt**, Greeley, Ruggiero & **Perle**, L.L.P. the power to insert in the spaces provided above the title of the invention, filing date, application number, and attorney's docket number of said application when known.

IN WITNESS WHEREOF, I, the said ASSIGNOR have executed this Assignment this \_\_\_\_\_ day of \_\_\_\_\_, 201\_\_\_.

Peng YANG

Witness Signature

Witness Name

IN WITNESS WHEREOF, I, the said ASSIGNOR have executed this Assignment this day of \_\_\_\_\_\_, 201\_\_\_\_,

Ravi S. ARVAPALLY

### P02557-US-UTIL 0010819USU/4450

Witness Signature

Witness Name

IN WITNESS WHEREOF, I, the said **ASSIGNOR** have executed this Assignment this \_\_\_\_\_\_ day of \_\_\_\_\_\_, 201\_\_\_\_.

Wally F. LO FARO

Witness Signature

Witness Name

IN WITNESS WHEREOF, I, the said **ASSIGNOR** have executed this Assignment this \_\_\_\_\_ day of \_\_\_\_\_\_, 201\_\_\_.

Kamalesh V. RAO

Witness Signature

Witness Name

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Agreed and accepted this	18 <sup>11</sup> day of	flaher ?	, 20 <u>/</u> ¥.
MASTERCARD INTERN	ATIONAL	INCOR	PORATED

By: às. Mannyly, Counsel Title: Vic ×, <u>ang man</u>

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