

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
 Stylesheet Version v1.2

EPAS ID: PAT7292367

SUBMISSION TYPE:	CORRECTIVE ASSIGNMENT
NATURE OF CONVEYANCE:	Corrective Assignment to correct the APP. NO. 16/990,698 previously recorded on Reel 058294 Frame 0161. Assignor(s) hereby confirms the APP. NO. 16/990,968..
CONVEYING PARTY DATA	
Name	Execution Date
EBUREAU, LLC	12/01/2021
IOVATION, INC.	12/01/2021
SIGNAL DIGITAL, INC.	12/01/2021
TRANS UNION LLC	12/01/2021
TRANSUNION HEALTHCARE, INC.	12/01/2021
TRANSUNION INTERACTIVE, INC.	12/01/2021
TRANSUNION RENTAL SCREENING SOLUTIONS, INC.	12/01/2021
TRANSUNION TELEDATA LLC	12/01/2021
AGGREGATE KNOWLEDGE, LLC	12/01/2021
TRU OPTIK DATA CORP.	12/01/2021
NEUSTAR INFORMATION SERVICES, INC.	12/01/2021
TRUSTID, INC.	12/01/2021
NEUSTAR, INC.	12/01/2021
NEUSTAR IP INTELLIGENCE, INC.	12/01/2021
MARKETSHARE PARTNERS, LLC	12/01/2021
SONTIQ, INC.	12/01/2021
RECEIVING PARTY DATA	
Name:	JPMORGAN CHASE BANK, N.A
Street Address:	383 MADISON AVENUE
City:	NEW YORK
State/Country:	NEW YORK
Postal Code:	10179
PROPERTY NUMBERS Total: 1	
Property Type	Number
Application Number:	16990698
CORRESPONDENCE DATA	
Fax Number:	

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.

Phone: 2128192511
Email: iprecordations@whitecase.com
Correspondent Name: KATE ANDES/ WHITE & CASE LLP
Address Line 1: 1221 AVENUE OF THE AMERICAS
Address Line 4: NEW YORK, NEW YORK 10020

ATTORNEY DOCKET NUMBER:	1107993-0227-CM65
NAME OF SUBMITTER:	KATE ANDES
SIGNATURE:	/Kate Andes/
DATE SIGNED:	04/21/2022

Total Attachments: 63

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PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
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EPAS ID: PAT7051170

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	GRANT OF SECURITY INTEREST IN UNITED STATES PATENTS
CONVEYING PARTY DATA	
Name	Execution Date
EBUREAU, LLC	12/01/2021
IOVATION, INC.	12/01/2021
SIGNAL DIGITAL, INC.	12/01/2021
TRANS UNION LLC	12/01/2021
TRANSUNION HEALTHCARE, INC.	12/01/2021
TRANSUNION INTERACTIVE, INC.	12/01/2021
TRANSUNION RENTAL SCREENING SOLUTIONS, INC.	12/01/2021
TRANSUNION TELEDATA LLC	12/01/2021
AGGREGATE KNOWLEDGE, LLC	12/01/2021
TRU OPTIK DATA CORP.	12/01/2021
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TRUSTID, INC.	12/01/2021
NEUSTAR, INC.	12/01/2021
NEUSTAR IP INTELLIGENCE, INC.	12/01/2021
MARKETSHARE PARTNERS, LLC	12/01/2021
SONTIQ, INC.	12/01/2021
RECEIVING PARTY DATA	
Name:	JPMORGAN CHASE BANK, N.A
Street Address:	383 MADISON AVENUE
City:	NEW YORK
State/Country:	NEW YORK
Postal Code:	10179
PROPERTY NUMBERS Total: 183	
Property Type	Number
Patent Number:	7536398
Patent Number:	8005844
Patent Number:	8516439
Patent Number:	8676684
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Property Type	Number
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Application Number:	16686906
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Property Type	Number
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Property Type	Number
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Application Number:	11042662
Application Number:	10389872
Application Number:	10659602
Application Number:	10750009
Application Number:	15620743
Application Number:	17179336
Application Number:	17080556

CORRESPONDENCE DATA

Fax Number:

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.

Phone: 2128192511

Email: iprecordations@whitecase.com

Correspondent Name: KATE ANDES/ WHITE & CASE LLP

Address Line 1: 1221 AVENUE OF THE AMERICAS

Address Line 4: NEW YORK, NEW YORK 10020

ATTORNEY DOCKET NUMBER: 1107993-0227-CM65

NAME OF SUBMITTER: KATE ANDES

SIGNATURE: /Kate Andes/

DATE SIGNED:	12/01/2021
Total Attachments: 20 source=TransUnion - 2L Patent Security Agreement (Executed)#page1.tif source=TransUnion - 2L Patent Security Agreement (Executed)#page2.tif source=TransUnion - 2L Patent Security Agreement (Executed)#page3.tif source=TransUnion - 2L Patent Security Agreement (Executed)#page4.tif source=TransUnion - 2L Patent Security Agreement (Executed)#page5.tif source=TransUnion - 2L Patent Security Agreement (Executed)#page6.tif source=TransUnion - 2L Patent Security Agreement (Executed)#page7.tif source=TransUnion - 2L Patent Security Agreement (Executed)#page8.tif source=TransUnion - 2L Patent Security Agreement (Executed)#page9.tif source=TransUnion - 2L Patent Security Agreement (Executed)#page10.tif source=TransUnion - 2L Patent Security Agreement (Executed)#page11.tif source=TransUnion - 2L Patent Security Agreement (Executed)#page12.tif source=TransUnion - 2L Patent Security Agreement (Executed)#page13.tif source=TransUnion - 2L Patent Security Agreement (Executed)#page14.tif source=TransUnion - 2L Patent Security Agreement (Executed)#page15.tif source=TransUnion - 2L Patent Security Agreement (Executed)#page16.tif source=TransUnion - 2L Patent Security Agreement (Executed)#page17.tif source=TransUnion - 2L Patent Security Agreement (Executed)#page18.tif source=TransUnion - 2L Patent Security Agreement (Executed)#page19.tif source=TransUnion - 2L Patent Security Agreement (Executed)#page20.tif	

GRANT OF SECURITY INTEREST
IN UNITED STATES PATENTS

FOR GOOD AND VALUABLE CONSIDERATION, receipt and sufficiency of which are hereby acknowledged, **EBUREAU, LLC**, a Delaware limited liability company with principal offices at 555 West Adams Street, Chicago, Illinois 60661, **IOVATION, INC.**, a Delaware corporation with principal offices at 555 West Adams Street, Chicago, Illinois 60661, **SIGNAL DIGITAL, INC.**, a Delaware corporation with principal offices at 555 West Adams Street, Chicago, Illinois 60661, **TRANS UNION LLC**, a Delaware limited liability company with principal offices at 555 West Adams Street, Chicago, Illinois 60661, **TRANSUNION HEALTHCARE, INC.**, a Texas corporation with principal offices at 555 West Adams Street, Chicago, Illinois 60661, **TRANSUNION INTERACTIVE, INC.**, a Delaware corporation with principal offices at 555 West Adams Street, Chicago, Illinois 60661, **TRANSUNION RENTAL SCREENING SOLUTIONS, INC.**, a Delaware corporation with principal offices at 555 West Adams Street, Chicago, Illinois 60661, **TRANSUNION TELEDATA LLC**, an Oregon limited liability company with principal offices at 555 West Adams Street, Chicago, Illinois 60661, **AGGREGATE KNOWLEDGE, LLC**, a Delaware limited liability company with principal offices at 1906 Reston Metro Plaza, Suite 500, Reston, Virginia 20190, **TRU OPTIK DATA CORP.**, a Delaware corporation with principal offices at 555 West Adams Street, Chicago, Illinois 60661, **NEUSTAR INFORMATION SERVICES, INC.**, a Delaware corporation with principal offices at 1906 Reston Metro Plaza, Suite 500, Reston, Virginia 20190, **TRUSTID, INC.**, a Delaware corporation with principal offices at 1906 Reston Metro Plaza, Suite 500, Reston, Virginia 20190, **NEUSTAR, INC.**, a Delaware corporation with principal offices at 1906 Reston Metro Plaza, Suite 500, Reston, Virginia 20190, **NEUSTAR IP INTELLIGENCE, INC.**, a Delaware corporation with principal offices at 1906 Reston Metro Plaza, Suite 500, Reston, Virginia 20190, **MARKETSHARE PARTNERS, LLC**, a Delaware limited liability company with principal offices at 1906 Reston Metro Plaza, Suite 500, Reston, Virginia 20190, and **SONTIQ, INC.**, a Delaware corporation with principal offices at 9920 Franklin Square, Suite 250, Nottingham, Maryland 21236 (each, a “Grantor” and collectively, the “Grantors”), hereby grant to **JPMORGAN CHASE BANK, N.A.**, as Collateral Agent, with principal offices at 383 Madison Avenue New York, NY 10179 (the “Grantee”), a continuing security interest in (i) all of the Grantor’s rights, title and interest in, to and under the United States patents (the “Patents”) set forth on Schedule A attached hereto, in each case together with (ii) all Proceeds (as such term is defined in the Security Agreement referred to below) and products of the Patents, and (iii) all causes of action arising prior to or after the date hereof for infringement of any of the Patents or unfair competition regarding the same.

THIS GRANT is made to secure the payment of all the Secured Obligations of the Grantor, as such term is defined in the Second Lien Security Agreement among the Grantor, the other grantors from time to time party thereto and the Grantee, dated as of December 1, 2021 (as amended, modified, restated and/or supplemented from time to time, the “Security Agreement”). Upon the occurrence of the Termination Date (as defined in the Security Agreement), the Grantee shall execute, acknowledge, and deliver to the Grantor an instrument in writing releasing the security interest in the Patents acquired under this Grant.

This Grant has been granted in conjunction with the security interest granted to the Grantee under the Security Agreement. The rights and remedies of the Grantee with respect to the security interest granted herein are as set forth in the Security Agreement, all terms and provisions of which are incorporated herein by reference. In the event that any provisions of this Grant are deemed to conflict with the Security Agreement, the provisions of the Security Agreement shall govern in all respects.

This Agreement may be executed in any number of counterparts and by the different parties hereto on separate counterparts, each of which when so executed and delivered shall be an original, but all

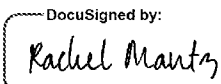
of which shall together constitute one and the same instrument. A set of counterparts executed by all the parties hereto shall be lodged with the Borrower and the Collateral Agent. Delivery of an executed counterpart of this Agreement by facsimile or electronic mail shall be equally effective as delivery of an original executed counterpart.

THIS AGREEMENT AND THE RIGHTS AND OBLIGATIONS OF THE PARTIES HEREUNDER SHALL BE CONSTRUED IN ACCORDANCE WITH AND BE GOVERNED BY THE LAW OF THE STATE OF NEW YORK. ANY LEGAL ACTION OR PROCEEDING ARISING HEREUNDER OR IN ANY WAY CONNECTED WITH OR RELATED OR INCIDENTAL TO THE DEALINGS OF THE PARTIES HERETO, IN EACH CASE WHETHER NOW EXISTING OR HEREAFTER ARISING MAY BE BROUGHT IN THE COURTS OF THE STATE OF NEW YORK SITTING IN NEW YORK CITY OR OF THE UNITED STATES FOR THE SOUTHERN DISTRICT OF NEW YORK, AND, BY EXECUTION AND DELIVERY OF THIS AGREEMENT, EACH GRANTOR, EACH LENDER AND THE COLLATERAL AGENT HEREBY CONSENTS FOR ITSELF AND IN RESPECT OF ITS PROPERTY, TO THE NON-EXCLUSIVE JURISDICTION OF THE AFORESAID COURTS. EACH GRANTOR, EACH LENDER AND THE COLLATERAL AGENT IRREVOCABLY WAIVES, TO THE EXTENT PERMITTED BY APPLICABLE LAW, ANY OBJECTION, INCLUDING ANY OBJECTION TO THE LAYING OF VENUE OR BASED ON THE GROUNDS OF FORUM NON CONVENIENS, WHICH IT MAY NOW OR HEREAFTER HAVE TO THE BRINGING OF ANY ACTION OR PROCEEDING IN SUCH JURISDICTION IN RESPECT OF ANY LOAN DOCUMENT OR OTHER DOCUMENT RELATED THERETO. EACH PARTY HERETO IRREVOCABLY CONSENTS TO SERVICE OF PROCESS IN ANY ACTION OR PROCEEDING ARISING OUT OF OR RELATING TO ANY LOAN DOCUMENTS IN THE MANNER PROVIDED FOR NOTICES (OTHER THAN TELECOPIER) IN SECTION 10.02 OF THE CREDIT AGREEMENT. NOTHING IN THIS AGREEMENT OR ANY OTHER LOAN DOCUMENT WILL AFFECT THE RIGHT OF ANY PARTY HERETO TO SERVE PROCESS IN ANY OTHER MANNER PERMITTED BY APPLICABLE LAW.

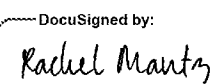
[Remainder of this page intentionally left blank; signature page follows]

IN WITNESS WHEREOF, the undersigned have executed this Agreement as of the date first written above.

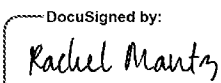
TRANS UNION LLC

By: 
Name: Rachel Mantz
Title: Senior Vice President, Deputy
General Counsel and Corporate
Secretary

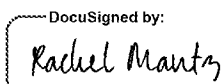
TRANSUNION INTERACTIVE, INC.

By: 
Name: Rachel Mantz
Title: Vice President, Secretary

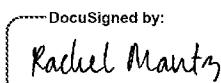
**TRANSUNION RENTAL SCREENING
SOLUTIONS, INC.**

By: 
Name: Rachel Mantz
Title: Vice President, Secretary

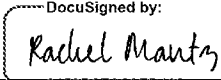
TRANSUNION HEALTHCARE, INC.

By: 
Name: Rachel Mantz
Title: Vice President, Secretary

SIGNAL DIGITAL, INC.

By: 
Name: Rachel Mantz
Title: Vice President, Secretary

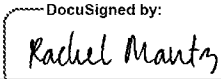
IOVATION INC.

By: 
0153D2E8C9EB482
Name: Rachel Mantz
Title: Vice President, Secretary

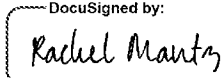
eBUREAU, LLC

By: 
0153D2E8C9EB482
Name: Rachel Mantz
Title: Vice President, Secretary

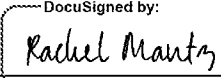
TRU OPTIK DATA CORP.

By: 
0153D2E8C9EB482
Name: Rachel Mantz
Title: Vice President, Secretary

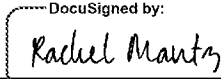
NEUSTAR, INC.

By: 
0153D2E8C9EB482
Name: Rachel Mantz
Title: Senior Vice President, Secretary

AGGREGATE KNOWLEDGE, LLC

By: 
0153D2E8C9EB482
Name: Rachel Mantz
Title: Senior Vice President, Secretary

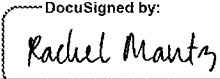
MARKETSHARE PARTNERS, LLC

By: 
0153D2E8C9EB482
Name: Rachel Mantz
Title: Senior Vice President, Secretary

TRUSTID, INC.

By: 
Name: Rachel Mantz
Title: Senior Vice President, Secretary

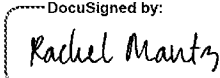
**NEUSTAR INFORMATION SERVICES,
INC.**

By: 
Name: Rachel Mantz
Title: Senior Vice President, Secretary

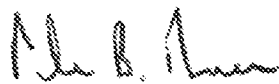
NEUSTAR IP INTELLIGENCE, INC.

By: 
Name: Rachel Mantz
Title: Senior Vice President, Secretary

SONTIQ, INC.

By: 
Name: Rachel Mantz
Title: Senior Vice President, Secretary

JPMORGAN CHASE BANK, N.A., as Collateral
Agent and Grantee

By 
Name: Peter B. Thauer
Title: Managing Director

SCHEDULE A

Patents

<u>Grantor</u>	<u>Application / Patent Number</u>	<u>Title</u>
eBureau, LLC	7536398	ON-LINE ORGANIZATION OF DATA SETS
eBureau, LLC	8005844	ON-LINE ORGANIZATION OF DATA SETS
iovation Inc.	8516439	VISUALIZING OBJECT RELATIONSHIPS
iovation Inc.	8676684	SYSTEM AND METHOD FOR EVALUATING RISK IN FRAUD PREVENTION
iovation Inc.	9641521	SYSTEMS AND METHODS FOR NETWORK CONNECTED AUTHENTICATION
iovation Inc.	9467445	SYSTEMS AND METHODS FOR GROUP AUTHENTICATION
iovation Inc.	9876796	SYSTEMS AND METHODS FOR GROUP AUTHENTICATION
iovation Inc.	9203837	NETWORK SECURITY AND FRAUD DETECTION SYSTEM AND METHOD
iovation Inc.	9118646	NETWORK SECURITY AND FRAUD DETECTION SYSTEM AND METHOD
iovation Inc.	7272728	NETWORK SECURITY AND FRAUD DETECTION SYSTEM AND METHOD
iovation Inc.	8776225	NETWORK SECURITY AND FRAUD DETECTION SYSTEM AND METHOD
iovation Inc.	7526796	METHODS AND APPARATUS FOR SECURELY SIGNING ON TO A WEBSITE VIA A SECURITY WEBSITE
iovation Inc.	8751815	CREATING AND VERIFYING GLOBALLY UNIQUE DEVICE-SPECIFIC IDENTIFIERS
Signal Digital, Inc.	8560610	UNIFIED COLLECTION AND DISTRIBUTION OF DATA
Signal Digital, Inc.	8825757	UNIFIED COLLECTION AND DISTRIBUTION OF DATA
Trans Union LLC	10885139	SYSTEM AND METHOD FOR AUTOMATED ADDRESS VERIFICATION

<u>Grantor</u>	<u>Application / Patent Number</u>	<u>Title</u>
Trans Union LLC	16/686,906	(31US3) SYSTEM AND METHOD FOR AUTOMATED COMMUNICATIONS SESSION ROUTING IN A COMMUNICATIONS HANDLING SYSTEM
Trans Union LLC	16/392,243	(26US2) SYSTEMS AND METHODS FOR DYNAMIC IDENTITY DECISIONING
Trans Union LLC	16/287,799	(32US2) Fraud Prevention Exchange System and Method
Trans Union LLC	7835983	(20US2) CREDIT APPROVAL MONITORING SYSTEM AND METHOD
Trans Union LLC	17/236,164	(19US1) SYSTEMS AND METHODS FOR DETERMINING RISK OF IDENTITY FRAUD BASED ON MULTIPLE FRAUD DETECTION MODELS
Trans Union LLC	17/140,931	(25US3) SYSTEMS AND METHODS FOR MEASURING EFFECTIVENESS OF MARKETING AND ADVERTISING CAMPAIGNS
Trans Union LLC	17/074,263	(03US3) SYSTEM AND METHOD FOR MATCHING OF DATABASE RECORDS BASED ON SIMILARITIES TO SEARCH QUERIES
Trans Union LLC	10503798	(18US2) SYSTEM AND METHOD FOR AUTOMATED ADDRESS VERIFICATION
Trans Union LLC	10482531	(31US2) SYSTEM AND METHOD FOR AUTOMATED COMMUNICATIONS SESSION ROUTING IN A COMMUNICATIONS HANDLING SYSTEM
Trans Union LLC	9996856	(29US2) DIGITAL PRESCREEN TARGETED MARKETING SYSTEM AND METHOD
Trans Union LLC	10885544	(25US2) SYSTEM AND METHODS FOR MEASURING EFFECTIVENESS OF MARKETING AND ADVERTISING CAMPAIGNS
Trans Union LLC	9292581	(05US4) SYSTEM AND METHOD FOR CONTEXTUAL AND FREE FORMAT MATCHING OF ADDRESSES
Trans Union LLC	9843582	(15US3) IDENTITY VERIFICATION SYSTEMS AND METHODS

<u>Grantor</u>	<u>Application / Patent Number</u>	<u>Title</u>
Trans Union LLC	13/841,022	(21US2) SYSTEMS AND METHODS FOR TARGETED INTERNET MARKETING BASED ON OFFLINE, ONLINE, AND CREDIT-RELATED DATA
Trans Union LLC	10810218	(03US2) SYSTEM AND METHOD FOR MATCHING OF DATABASE RECORDS BASED ON SIMILARITIES TO SEARCH QUERIES
Trans Union LLC	8595219	(05US2) SYSTEM AND METHOD FOR CONTEXTUAL AND FREE FORMAT MATCHING OF ADDRESSES
Trans Union LLC	8695105	(15US2) IDENTITY VERIFICATION SYSTEMS AND METHODS
Trans Union LLC	8775291	(05US2) SYSTEMS AND METHODS FOR ENRICHMENT OF DATA RELATING TO CONSUMER CREDIT COLLATERALIZED DEBT AND REAL PROPERTY AND UTILIZATION OF SAME TO MAXIMIZE RISK PREDICTION
Trans Union LLC	8548903	(02US2) SYSTEMS AND METHODS FOR MINIMIZING EFFECTS OF AUTHORIZED USER CREDIT TRADELINES
TransUnion Rental Screening Solutions, Inc.	8650407	APPLICANT SCREENING
TransUnion Rental Screening Solutions, Inc.	8631242	APPLICANT SCREENING
TransUnion Rental Screening Solutions, Inc.	9705863	APPLICANT SCREENING
TransUnion Rental Screening Solutions, Inc.	10686773	APPLICANT SCREENING
TransUnion Rental Screening Solutions, Inc.	8234498	SCREENING USING A PERSONAL IDENTIFICATION CODE
TransUnion Rental Screening Solutions, Inc.	8418254	APPLICANT SCREENING
TransUnion Rental Screening Solutions, Inc.	9043930	APPLICANT SCREENING
TransUnion Rental Screening Solutions, Inc.	9710663	APPLICANT SCREENING
TransUnion Rental Screening Solutions, Inc.	10580724	APPLICANT SCREENING
TransUnion Healthcare, Inc.	7778850	(08US2) HEALTH CARE PATIENT BENEFITS ELIGIBILITY RESEARCH SYSTEM AND METHODS

<u>Grantor</u>	<u>Application / Patent Number</u>	<u>Title</u>
TransUnion Healthcare, Inc.	7797165	(12US1) LOSSLESS ACCOUNT COMPRESSION FOR HEALTH CARE PATIENT BENEFITS ELIGIBILITY RESEARCH SYSTEM AND METHODS
TransUnion Healthcare, Inc.	8204762	(08US3) HEALTH CARE PATIENT BENEFITS ELIGIBILITY RESEARCH SYSTEM AND METHODS
TransUnion Healthcare, Inc.	8326656	(12US2) LOSSLESS ACCOUNT COMPRESSION FOR HEALTH CARE PATIENT BENEFITS ELIGIBILITY RESEARCH SYSTEM AND METHODS
TransUnion Healthcare, Inc.	8433586	(08US5) HEALTH CARE PATIENT BENEFITS ELIGIBILITY RESEARCH SYSTEM AND METHODS
TransUnion LLC	8781850	(07US1) SYSTEM AND METHOD FOR ENHANCING AND AUTHENTICATING AN INSURANCE ELIGIBILITY TRANSACTION
TransUnion Healthcare, Inc.	8407066	(04US2) INSURANCE ESTIMATING SYSTEM
TransUnion Interactive, Inc.	9158903	(08US3) IDENTITY VERIFICATION SYSTEMS AND METHODS
TransUnion Interactive, Inc.	9124606	(05US4) METHODS, APPARATUSES AND SYSTEMS FACILITATING SEAMLESS, VIRTUAL INTEGRATION OF ONLINE MEMBERSHIP MODELS AND SERVICES
TransUnion Interactive, Inc.	8527773	(08US2) IDENTITY VERIFICATION SYSTEMS AND METHODS
TransUnion Interactive, Inc.	8359393	(05US3) METHODS AND APPARATUSES AND SYSTEMS FACILITATING SEAMLESS, VIRTUAL INTEGRATION OF ONLINE MEMBERSHIP MODELS AND SERVICES
TransUnion Interactive, Inc.	7630932	(04US3) LOAN RATE AND LENDING INFORMATION ANALYSIS SYSTEM
TransUnion Interactive, Inc.	7337468	(05US2) METHODS, APPARATUSES AND SYSTEMS FACILITATING SEAMLESS, VIRTUAL INTEGRATION OF ONLINE MEMBERSHIP MODELS AND SERVICES

<u>Grantor</u>	<u>Application / Patent Number</u>	<u>Title</u>
TransUnion Teledata LLC	7792864	ENTITY IDENTIFICATION AND/OR ASSOCIATION USING MULTIPLE DATA ELEMENTS
Tru Optik Data Corp.	10,412,180	Household graphing system
Tru Optik Data Corp.	10,728,349	TRU TORRENT PLATFORM METHODS, APPARATUSES AND MEDIA
NEUSTAR, INC.	14/321,495	METHOD AND SYSTEM FOR FULLY ENCRYPTED REPOSITORY
NEUSTAR, INC.	17/323,450	METHODS AND SYSTEMS FOR DEVICE AUTHENTICATION
NEUSTAR, INC.	11,108,562	SYSTEMS AND METHODS FOR VERIFYING A ROUTE TAKEN BY A COMMUNICATION
NEUSTAR, INC.	15/652,108	SYSTEMS AND METHODS FOR MITIGATING AND/OR PREVENTING DISTRIBUTED DENIAL-OF-SERVICE ATTACKS
NEUSTAR, INC.	17/209,517	SYSTEMS AND METHODS FOR DISTRIBUTING PARTIAL DATA TO SUBNETWORKS
NEUSTAR, INC.	17/333,146	SYSTEMS AND METHODS FOR ENABLING TRUSTED COMMUNICATIONS BETWEEN CONTROLLERS
NEUSTAR, INC.	17/140,427	SYSTEMS AND METHODS FOR PROVIDING CALLING PARTY INFORMATION
NEUSTAR, INC.	15/690,091	DATABASE LOCKING USING LOGICAL LOCK MECHANISM
NEUSTAR, INC.	16/000,740	IDENTITY FRAUD VERIFICATION
NEUSTAR, INC.	17/360,299	SYSTEMS AND METHODS FOR PROVIDING CONTEXT DATA ASSOCIATED WITH A COMMUNICATIONS SESSION TO THE CALLED DEVICE
NEUSTAR, INC.	11,146,676	SYSTEMS AND METHODS FOR AUTOMATICALLY AUTHENTICATING COMMUNICATIONS WITH A CALLING DEVICE
AGGREGATE KNOWLEDGE, LLC	11,144,933	SYSTEM AND METHOD FOR MAINTAINING METADATA CORRECTNESS

<u>Grantor</u>	<u>Application / Patent Number</u>	<u>Title</u>
MARKETSHARE PARTNERS LLC	15/408,305	AUTOMATICALLY PRESCRIBING TOTAL BUDGET FOR MARKETING AND SALES RESOURCES AND ALLOCATION ACROSS SPENDING CATEGORIES
NEUSTAR, INC.	16/155,115	METHOD AND SYSTEM FOR PREDICTING A GEOGRAPHIC LOCATION OF A NETWORK ENTITY
NEUSTAR, INC.	17/228,074	COMPUTING DEVICE AND SYSTEM FOR RENDERING CONTACT INFORMATION THAT IS RETRIEVED FROM A NETWORK SERVICE
NEUSTAR, INC.	17/352,699	DATA AGGREGATION SYSTEM FOR ENABLING QUERY OPERATIONS ON RESTRICTED DATA THAT ORIGINATES FROM MULTIPLE INDEPENDENT MULTIPLE SOURCES
NEUSTAR, INC.	15/256,568	AUTOMATED LEARNING OF MODELS FOR DOMAIN THEORIES
NEUSTAR, INC.	16/895,543	MULTIEVENT ATTRIBUTION MODELING SYSTEM
NEUSTAR, INC.	17/247,387	END-TO-END MANAGEMENT OF AUTHENTICATED COMMUNICATIONS
NEUSTAR, INC.	17/116,160	OPTIMIZING DISPLAY OF CALLER IDENTITY ON COMMUNICATION DEVICES
NEUSTAR, INC.	17/327,105	SYSTEM AND METHOD FOR PERSONALIZING THE LANGUAGE ASSOCIATED WITH OUTBOUND CALLS
TRUSTID, INC.	16/990,968	USING CALLING PARTY NUMBER FOR CALLER AUTHENTICATION
NEUSTAR, INC.	8,769,304	METHOD AND SYSTEM FOR FULLY ENCRYPTED REPOSITORY
NEUSTAR, INC.	9,094,811	SYSTEM AND METHOD FOR DELIVERING SHORT MESSAGE SERVICE TEXT TO CALL CENTERS
NEUSTAR, INC.	9,521,240	SYSTEM AND METHOD FOR DELIVERING TEXT MESSAGES TO CALL CENTERS
NEUSTAR, INC.	10,225,722	SYSTEM AND METHOD FOR DELIVERING SHORT MESSAGE SERVICE TEXT TO CALL CENTERS

<u>Grantor</u>	<u>Application / Patent Number</u>	<u>Title</u>
NEUSTAR, INC.	9,203,819	METHODS AND SYSTEMS FOR PAIRING DEVICES
NEUSTAR, INC.	9,215,223	METHODS AND SYSTEMS FOR SECURE IDENTITY MANAGEMENT
NEUSTAR, INC.	9,344,413	METHODS AND SYSTEMS FOR DEVICE DISABLEMENT
NEUSTAR, INC.	11,012,240	METHODS AND SYSTEMS FOR DEVICE AUTHENTICATION
NEUSTAR, INC.	10404472	SYSTEMS AND METHODS FOR ENABLING TRUSTED COMMUNICATIONS BETWEEN ENTITIES
NEUSTAR, INC.	11,025,428	SYSTEMS AND METHODS FOR ENABLING TRUSTED COMMUNICATIONS BETWEEN CONTROLLERS
NEUSTAR, INC.	10,958,725	SYSTEMS AND METHODS FOR DISTRIBUTING PARTIAL DATA TO SUBNETWORKS
NEUSTAR, INC.	10,033,863	DETERMINING PORTING HISTORIES FOR TELEPHONE NUMBERS
NEUSTAR, INC.	10,277,735	INDIVIDUAL TELEPHONE NUMBER ASSIGNMENT
NEUSTAR, INC.	10,887,457	SYSTEMS AND METHODS FOR PROVIDING CALLING PARTY INFORMATION
NEUSTAR, INC.	10,652,388	COMMUNICATION SYSTEMS AND METHODS FOR CAUSING DISPLAY OF VISUAL CONTENT ON A SCREEN ASSOCIATED WITH A CALLING DEVICE
NEUSTAR, INC.	10,244,107	SYSTEMS AND METHODS FOR CAUSING DISPLAY OF A REPUTATION INDICATOR ASSOCIATED WITH A CALLED PARTY
NEUSTAR, INC.	10,694,320	METHODS AND APPARATUS TO ENABLE DEVICE BASED GEO-LOCATION MESSAGES
NEUSTAR, INC.	11,057,516	SYSTEMS AND METHODS FOR PROVIDING CONTEXT DATA ASSOCIATED WITH A COMMUNICATIONS SESSION TO THE CALLED DEVICE
NEUSTAR, INC.	7,720,082	SYSTEM AND METHOD FOR SHORT MESSAGE SERVICE AND INSTANT MESSAGING CONTINUITY
NEUSTAR INFORMATION SERVICES, INC.	8,085,924	ONE NUMBER, INTELLIGENT CALL PROCESSING SYSTEM

<u>Grantor</u>	<u>Application / Patent Number</u>	<u>Title</u>
NEUSTAR IP INTELLIGENCE, INC.	6,684,250	METHOD AND APPARATUS FOR ESTIMATING GEOGRAPHIC LOCATION OF A NETWORKED ENTITY
NEUSTAR IP INTELLIGENCE, INC.	9,021,080	METHOD AND SYSTEM TO ASSOCIATE GEOGRAPHIC LOCATION INFORMATION WITH A NETWORK ADDRESS USING A COMBINATION OF AUTOMATED AND MANUAL PROCESSES
NEUSTAR IP INTELLIGENCE, INC.	7,072,963	METHOD AND SYSTEM TO MODIFY GEOLOCATION ACTIVITIES BASED ON LOGGED QUERY INFORMATION
NEUSTAR IP INTELLIGENCE, INC.	7,809,857	METHOD AND SYSTEM TO COLLECT GEOGRAPHIC LOCATION INFORMATION FOR A NETWORK ADDRESS UTILIZING GEOGRAPHICALLY DISPERSED DATA COLLECTION AGENTS
NEUSTAR INFORMATION SERVICES, INC.	6,748,426	SYSTEM AND METHOD FOR LINKING INFORMATION IN A GLOBAL COMPUTER NETWORK
NEUSTAR INFORMATION SERVICES, INC.	7,167,907	SYSTEM FOR LINKING INFORMATION IN A GLOBAL COMPUTER NETWORK
NEUSTAR INFORMATION SERVICES, INC.	7,243,075	REAL-TIME PROCESS FOR DEFINING, PROCESSING AND DELIVERING A HIGHLY CUSTOMIZED CONTACT LIST OVER A NETWORK
NEUSTAR INFORMATION SERVICES, INC.	8,064,586	REAL-TIME PROCESS FOR DEFINING, PROCESSING AND DELIVERING A HIGHLY CUSTOMIZED CONTACT LIST OVER A NETWORK
NEUSTAR, INC.	7,337,361	TEST HARNESS FOR ENTERPRISE APPLICATION INTEGRATION ENVIRONMENT
NEUSTAR IP INTELLIGENCE, INC.	7,685,279	GEO-LOCATION AND GEO- COMPLIANCE UTILIZING A CLIENT AGENT
NEUSTAR INFORMATION SERVICES, INC.	8,160,614	AUTOMATED CONCIERGE SYSTEM AND METHOD
AGGREGATE KNOWLEDGE, LLC	7,788,358	USING CROSS-SITE RELATIONSHIPS TO GENERATE RECOMMENDATIONS

<u>Grantor</u>	<u>Application / Patent Number</u>	<u>Title</u>
AGGREGATE KNOWLEDGE, LLC	7,853,630	SYSTEM AND METHOD FOR THE DYNAMIC GENERATION OF CORRELATION SCORES BETWEEN ARBITRARY OBJECTS
AGGREGATE KNOWLEDGE, LLC	7,904,524	CLIENT RECOMMENDATION MECHANISM
AGGREGATE KNOWLEDGE, LLC	8,200,677	SYSTEM AND METHOD FOR THE DYNAMIC GENERATION OF CORRELATION SCORES BETWEEN ARBITRARY OBJECTS
AGGREGATE KNOWLEDGE, LLC	8,489,619	SYSTEM AND METHOD FOR THE DYNAMIC GENERATION OF CORRELATION SCORES BETWEEN ARBITRARY OBJECTS
NEUSTAR IP INTELLIGENCE, INC.	8,204,982	SYSTEM AND METHOD OF MIDDLEBOX DETECTION AND CHARACTERIZATION
NEUSTAR IP INTELLIGENCE, INC.	8,463,904	SYSTEM AND METHOD OF MIDDLEBOX DETECTION AND CHARACTERIZATION
NEUSTAR, INC.	8,504,610	SYSTEM AND METHOD FOR OBTAINING AND EXECUTING INSTRUCTIONS FROM A PRIVATE NETWORK
NEUSTAR INFORMATION SERVICES, INC.	8,060,367	SPATIALLY INDEXED GRAMMAR AND METHODS OF USE
AGGREGATE KNOWLEDGE, LLC	8,032,714	METHODS AND SYSTEMS FOR CACHING DATA USING BEHAVIORAL EVENT CORRELATIONS
AGGREGATE KNOWLEDGE, LLC	8,627,013	METHODS AND SYSTEMS FOR CACHING DATA USING BEHAVIORAL EVENT CORRELATIONS
AGGREGATE KNOWLEDGE, LLC	9,058,279	METHODS AND SYSTEMS FOR CACHING DATA USING BEHAVIORAL EVENT CORRELATIONS
AGGREGATE KNOWLEDGE, LLC	9,740,619	METHODS AND SYSTEMS FOR CACHING DATA USING BEHAVIORAL EVENT CORRELATIONS
NEUSTAR IP INTELLIGENCE, INC.	9,037,694	METHOD AND SYSTEM FOR DETERMINING THE GEOGRAPHIC LOCATION OF A NETWORK BLOCK

<u>Grantor</u>	<u>Application / Patent Number</u>	<u>Title</u>
NEUSTAR IP INTELLIGENCE, INC.	8,055,792	METHOD AND SYSTEM FOR EVALUATING AND SELECTING TRACEROUTES TO BE USED IN DETERMINING THE GEOGRAPHIC LOCATION OF A NETWORK BLOCK
NEUSTAR INFORMATION SERVICES, INC.	8,611,874	AUTOMATED MOBILE INTELLIGENT CALL PROCESSING SYSTEM
MARKETSHARE PARTNERS LLC	8,244,571	AUTOMATED SPECIFICATION, ESTIMATION, DISCOVERY OF CAUSAL DRIVERS AND MARKET RESPONSE ELASTICITIES OR LIFT FACTORS
MARKETSHARE PARTNERS LLC	8,468,045	AUTOMATED SPECIFICATION, ESTIMATION, DISCOVERY OF CAUSAL DRIVERS AND MARKET RESPONSE ELASTICITIES OR LIFT FACTORS
NEUSTAR, INC.	8,126,426	SYSTEM AND METHOD FOR ASSESSING MOBILE APPLICATION VALUE
NEUSTAR, INC.	9,636,053	METHOD FOR DISTRIBUTING CONTACT INFORMATION BETWEEN APPLICATIONS
NEUSTAR, INC.	10,117,609	METHOD FOR DISTRIBUTING CONTACT INFORMATION BETWEEN APPLICATIONS
NEUSTAR, INC.	10,693,840	METHOD FOR DISTRIBUTING CONTACT INFORMATION BETWEEN APPLICATIONS
NEUSTAR INFORMATION SERVICES, INC.	8,457,613	AUTOMATED MOBILE INTELLIGENT COMMUNICATION PROCESSING SYSTEM
NEUSTAR IP INTELLIGENCE, INC.	8,838,733	SYSTEM AND METHOD FOR MANAGING AN INTERNET DOMAIN BASED ON THE GEOGRAPHIC LOCATION OF AN ACCESSING USER
NEUSTAR IP INTELLIGENCE, INC.	8,429,124	ON DEMAND MULTI-LOCATION LARGE DATABASE SYNCHRONIZATION SYSTEM
AGGREGATE KNOWLEDGE, LLC	9,037,483	MULTI-TOUCH ATTRIBUTION MODEL FOR VALUING IMPRESSIONS AND OTHER ONLINE ACTIVITIES
AGGREGATE KNOWLEDGE, LLC	9,891,967	MULTI-TOUCH ATTRIBUTION MODEL FOR VALUING IMPRESSIONS AND OTHER ONLINE ACTIVITIES

<u>Grantor</u>	<u>Application / Patent Number</u>	<u>Title</u>
AGGREGATE KNOWLEDGE, LLC	10,649,818	MULTI-TOUCH ATTRIBUTION MODEL FOR VALUING IMPRESSIONS AND OTHER ONLINE ACTIVITIES
AGGREGATE KNOWLEDGE, LLC	8,725,779	SYSTEM AND METHOD FOR COUNTING AND STORING EVENTS AS SCALAR QUANTITIES IN SKEWED COUNTING ENVIRONMENTS
NEUSTAR IP INTELLIGENCE, INC.	9,838,301	SYSTEM AND METHOD FOR PREDICTING THE GEOGRAPHIC LOCATION OF AN INTERNET PROTOCOL ADDRESS
NEUSTAR IP INTELLIGENCE, INC.	8,788,437	SYSTEM AND METHOD FOR IMPLEMENTING A LEARNING MODEL FOR PREDICTING THE GEOGRAPHIC LOCATION OF AN INTERNET PROTOCOL ADDRESS
NEUSTAR IP INTELLIGENCE, INC.	9,280,750	SYSTEM AND METHOD FOR IMPLEMENTING A LEARNING MODEL FOR PREDICTING THE GEOGRAPHIC LOCATION OF AN INTERNET PROTOCOL ADDRESS
NEUSTAR IP INTELLIGENCE, INC.	8,965,934	METHOD AND APPARATUS FOR FACILITATING ANSWERING A QUERY ON A DATABASE
NEUSTAR IP INTELLIGENCE, INC.	8,874,615	METHOD AND APPARATUS FOR IMPLEMENTING A LEARNING MODEL FOR FACILITATING ANSWERING A QUERY ON A DATABASE
AGGREGATE KNOWLEDGE, LLC	10,002,075	MANAGING MEMORY RESOURCES IN A NETWORK ENVIRONMENT IN ORDER TO HANDLE QUERYING OF LOGICAL DATA STRUCTURES
NEUSTAR IP INTELLIGENCE, INC.	7,472,172	METHOD AND SYSTEM TO INITIATE GEOLOCATION ACTIVITIES ON DEMAND AND RESPONSE TO RECEIPT OF A QUERY
NEUSTAR IP INTELLIGENCE, INC.	9,390,386	METHODS, SYSTEMS, AND APPARATUS FOR PREDICTING CHARACTERISTICS OF A USER
NEUSTAR, INC.	9,282,160	METHOD, APPARATUS AND COMPUTER READABLE MEDIUM FOR FLEXIBLE CACHING OF RESOURCE ORIENTED WEB SERVICES

<u>Grantor</u>	<u>Application / Patent Number</u>	<u>Title</u>
NEUSTAR, INC.	9,602,622	FLEXIBLE CACHING OF RESOURCE ORIENTED WEB SERVICES
NEUSTAR, INC.	9,390,379	METHODS, SYSTEMS, AND APPARATUS FOR LEARNING A MODEL FOR PREDICTING CHARACTERISTICS OF A USER
NEUSTAR, INC.	9,898,501	METHOD AND SYSTEM FOR PERFORMING TRANSACTIONAL UPDATES IN A KEY-VALUE STORE
NEUSTAR, INC.	10,244,072	SYSTEM AND METHOD FOR FACILITATING ROUTING
NEUSTAR, INC.	10,089,411	METHOD AND APPARATUS AND COMPUTER READABLE MEDIUM FOR COMPUTING STRING SIMILARITY METRIC
NEUSTAR, INC.	9,697,476	SYSTEM AND METHOD FOR UTILIZING A MODEL TO PROCESS BIG DATA
NEUSTAR, INC.	10,097,647	METHOD AND SYSTEM FOR PREDICTING A GEOGRAPHIC LOCATION OF A NETWORK ENTITY
NEUSTAR, INC.	9,706,402	SYSTEM AND METHOD FOR SECURE DEVICE AUTHENTICATION
NEUSTAR, INC.	9,955,003	COMPUTING DEVICE AND SYSTEM FOR RENDERING CONTACT INFORMATION THAT IS RETRIEVED FROM A NETWORK SERVICE
NEUSTAR, INC.	10,547,739	COMPUTING DEVICE AND SYSTEM FOR RENDERING CONTACT INFORMATION THAT IS RETRIEVED FROM A NETWORK SERVICE
NEUSTAR, INC.	10,979,560	COMPUTING DEVICE AND SYSTEM FOR RENDERING CONTACT INFORMATION THAT IS RETRIEVED FROM A NETWORK SERVICE
NEUSTAR, INC.	10,108,818	PRIVACY-AWARE QUERY MANAGEMENT SYSTEM
NEUSTAR, INC.	10,339,330	DATA AGGREGATION SYSTEM FOR ENABLING QUERY OPERATIONS ON RESTRICTED DATA THAT ORIGINATES FROM MULTIPLE INDEPENDENT MULTIPLE SOURCES

<u>Grantor</u>	<u>Application / Patent Number</u>	<u>Title</u>
NEUSTAR, INC.	11,042,662	DATA AGGREGATION SYSTEM FOR ENABLING QUERY OPERATIONS ON RESTRICTED DATA THAT ORIGINATES FROM MULTIPLE INDEPENDENT MULTIPLE SOURCES
TRUSTID, INC.	8,238,532	METHOD OF AND SYSTEM FOR DISCOVERING AND REPORTING TRUSTWORTHINESS AND CREDIBILITY OF CALLING PARTY NUMBER INFORMATION
TRUSTID, INC.	9,001,985	METHOD OF AND SYSTEM FOR DISCOVERING AND REPORTING TRUSTWORTHINESS AND CREDIBILITY OF CALLING PARTY NUMBER INFORMATION
TRUSTID, INC.	9,264,536	SYSTEMS AND METHODS TO IDENTIFY ANI AND CALLER ID MANIPULATION FOR DETERMINING TRUSTWORTHINESS OF INCOMING CALLING PARTY AND BILLING NUMBER INFORMATION
TRUSTID, INC.	9,871,913	SYSTEMS AND METHODS TO IDENTIFY ANI AND CALLER ID MANIPULATION FOR DETERMINING TRUSTWORTHINESS OF INCOMING CALLING PARTY AND BILLING NUMBER INFORMATION
TRUSTID, INC.	9,762,728	USING CALLING PARTY NUMBER FOR CALL AUTHORIZATION
TRUSTID, INC.	10,389,872	USING CALLING PARTY NUMBER FOR CALLER AUTHENTICATION
TRUSTID, INC.	10,659,602	USING CALLING PARTY NUMBER FOR CALLER AUTHENTICATION
TRUSTID, INC.	10,750,009	USING CALLING PARTY NUMBER FOR CALLER AUTHENTICATION
Sontiq, Inc.	8,346,637	System And Method For Providing Recovery For Victims Of Check Fraud
Sontiq, Inc.	8,788,377	System And Method For Providing Recovery For Victims Of Check Fraud

<u>Grantor</u>	<u>Application / Patent Number</u>	<u>Title</u>
Sontiq, Inc.	8,886,687	Online Safety Deposit Box
Sontiq, Inc.	8,793,804	Identity Management System And Method
Sontiq, Inc. (f/k/a EZShield, Inc.)	D788,131	Display Screen Or Portion Thereof with a Graphical User Interface
Sontiq, Inc.	9,710,813	System And Method For Providing Recovery For Victims Of Check Fraud
Sontiq, Inc.	9,697,279	Online Safety Deposit Box
Sontiq, Inc.	15/620,743	System And Method For Providing Recovery For Victims Of Check Fraud
Sontiq, Inc.	17/179,336	Reputation Management and Machine Learning Systems and Processes
Sontiq, Inc.	17/080,556	Data Breach System and Method

<u>Grantor</u>	<u>Application / Patent Number</u>	<u>Title</u>
Sontiq, Inc.	8,886,687	Online Safety Deposit Box
Sontiq, Inc.	8,793,804	Identity Management System And Method
Sontiq, Inc. (f/k/a EZShield, Inc.)	D788,131	Display Screen Or Portion Thereof with a Graphical User Interface
Sontiq, Inc.	9,710,813	System And Method For Providing Recovery For Victims Of Check Fraud
Sontiq, Inc.	9,697,279	Online Safety Deposit Box
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Sontiq, Inc.	17/179,336	Reputation Management and Machine Learning Systems and Processes
Sontiq, Inc.	17/080,556	Data Breach System and Method