# PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT5213616

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	SECURITY AGREEMENT (FIRST LIEN)

### **CONVEYING PARTY DATA**

Name	Execution Date
TRITON US VP ACQUISITION CO.	10/29/2018

## **RECEIVING PARTY DATA**

Name:	BANK OF AMERICA, N.A., AS COLLATERAL AGENT
Street Address:	ONE BRYANT PARK
City:	NEW YORK
State/Country:	NEW YORK
Postal Code:	10036

## **PROPERTY NUMBERS Total: 42**

Property Type	Number
Patent Number:	8789119
Patent Number:	7796598
Patent Number:	8069464
Patent Number:	8578432
Patent Number:	8270488
Patent Number:	8565318
Patent Number:	9197857
Patent Number:	8713195
Patent Number:	8111971
Patent Number:	8613013
Patent Number:	8781003
Patent Number:	8655143
Patent Number:	8731000
Patent Number:	9832515
Patent Number:	8201204
Patent Number:	8068541
Patent Number:	6618096
Patent Number:	6543051
Patent Number:	7159230
Patent Number:	6986156

PATENT REEL: 047364 FRAME: 0034

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Property Type	Number
Patent Number:	6978310
Patent Number:	7274857
Patent Number:	8358916
Patent Number:	8301016
Patent Number:	7053960
Patent Number:	8370889
Patent Number:	8886022
Patent Number:	9819899
Patent Number:	9426479
Patent Number:	7881546
Patent Number:	7864840
Patent Number:	9241197
Patent Number:	9154819
Application Number:	10981053
Application Number:	11365182
Application Number:	11164115
Application Number:	12389458
Application Number:	12389588
Application Number:	12389453
Application Number:	15607542
Application Number:	15619938
Application Number:	14795353

#### **CORRESPONDENCE DATA**

**Fax Number:** (800)914-4240

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.

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**Email:** james.murray@wolterskluwer.com

Correspondent Name: JAMES MURRAY

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Address Line 2: CT CORPORATION

Address Line 4: COLUMBUS, OHIO 43219

NAME OF SUBMITTER:	DORIS KA
SIGNATURE:	/Doris Ka/
DATE SIGNED:	10/30/2018

### **Total Attachments: 14**

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#### FIRST LIEN PATENT SECURITY AGREEMENT

This First Lien Patent Security Agreement (this "<u>Agreement</u>"), dated as of October 29, 2018, is entered into by the undersigned (the "<u>Grantor</u>") in favor of Bank of America, N.A., as collateral agent (together with its successors and assigns, in such capacity, the "<u>Collateral Agent</u>").

WHEREAS, Grantor and certain other parties have executed and delivered that certain First Lien U.S. Pledge and Security Agreement, dated on even date herewith, in favor of the Collateral Agent (the "Pledge and Security Agreement") pursuant to which Grantor and certain other parties have granted to Collateral Agent, for the ratable benefit of the Secured Parties, a security interest in all of Grantor's and certain other parties' right, title, and interest in and to certain collateral including the Patent Collateral (as defined below);

**NOW, THEREFORE**, in consideration of the foregoing and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Grantor and the Collateral Agent hereby agree as follows:

SECTION 1. <u>Defined Terms</u>. Capitalized terms not otherwise defined herein have the meanings set forth in the Pledge and Security Agreement.

SECTION 2. Grant of Security Interest. Subject to the terms of the Pledge and Security Agreement, Grantor hereby grants to the Collateral Agent, for the ratable benefit of the Secured Parties, a security interest in and continuing lien on all of Grantor's right, title and interest in, to and under the following, in each case whether now owned or existing or hereafter acquired, developed, created or arising and wherever located, as collateral security for the prompt and complete payment and performance when due of the Obligations of Grantor: all Patents owned by Grantor, including, without limitation, the Patents set forth on Schedule A attached hereto (collectively, the "Patent Collateral").

SECTION 3. Security Agreement. The security interest granted pursuant to this Agreement is granted in conjunction with the security interest granted to the Collateral Agent for the Secured Parties pursuant to the Pledge and Security Agreement, and Grantor hereby acknowledges and affirms that the rights and remedies of the Collateral Agent with respect to the security interest in the Patent Collateral made and granted hereby are more fully set forth in the Pledge and Security Agreement, the terms and provisions of which are incorporated by reference herein as if fully set forth herein. In the event that any provision of this Agreement is deemed to conflict with the Pledge and Security Agreement, the provisions of the Pledge and Security Agreement shall control.

SECTION 4. <u>Recordation</u>. Grantor authorizes and requests that the Commissioner of Patents and Trademarks and any other applicable government officer record this Agreement.

SECTION 5. <u>Governing Law</u>. This agreement and the rights and obligations of the parties hereunder and any claim or controversy relating hereto shall be governed by, and construed and interpreted in accordance with, the laws of the State of New York, without regard to its conflicts of laws principles.

SECTION 6. <u>Counterparts</u>. This Agreement may be executed in any number of counterparts, each of which when so executed shall be deemed to be an original and all of which taken together shall constitute one and the same agreement.

[Signature page follows]

IN WITNESS WHEREOF, the undersigned has caused this Agreement to be duly executed and delivered as of the date first above written.

**GRANTOR:** 

TRITON US VP ACQUISITION CO.

By:

Name: Richard Medlock

Title: President

BANK OF AMERICA, N.A., as Collateral

Agent

By:\_

(Authorized Signatory)

[Signature Page to First Lien Patent Security Agreement]

PATENT

REEL: 047364 FRAME: 0039

# SCHEDULE A

App. No.	App. Date	Reg. No.	Reg. Date	Country	Title	Status	Owner
BR0011486	2000-06-09			BR	Systems and methods for adaptive programming and dynamic management of allocation of resources of width of band in a digital system of transmission of ample band	Revoked	Triton US VP Acquisition Co.
CA2663907	2006-11-09	CA2663907	8/11/2014	CA	Atomic channel changes in a switched digital video system	Abandoned	Triton US VP Acquisition Co.
CA2472244	2002-12-20	CA2472244	5/31/2010	CA	Trick modes for compressed video streams	Abandoned	Triton US VP Acquisition Co.
CA2501468	2003-10-07	CA2501468	12/20/2010	CA	Systems and methods for adjusting image contrast	Abandoned	Triton US VP Acquisition Co.
CA2680851	2008-03-18	CA2680851	1/5/2015	CA	Switched digital video client reverse channel traffic reduction	Abandoned	Triton US VP Acquisition Co.
CA2644288	2007-02-28	CA2644288	5/12/2014	CA	Systems and methods for transcoding bit streams	Issued	Triton US VP Acquisition Co.
CA2640607	2007-01-29	CA2640607	6/10/2013	CA	Systems and methods for transcoding bit streams	Lapsed	Triton US VP Acquisition Co.
CN200880119372	2008-12-05	CN101889451	2/12/2013	CN	Systems and Methods of Reducing Media Stream Delay Through Independent Decoder Clocks	Issued	Triton US VP Acquisition Co.
CN200980127658	2009-07-13	CN102100077	4/22/2014	CN	Splicing of encrypted video/audio content	Issued	Triton US VP Acquisition Co.
CN201680040393	2016-06-10			CN	Transitioning between broadcast and unicast streams	Pending	Triton US VP Acquisition Co.

App. No.	App. Date	Reg. No.	Reg. Date	Country	Title	Status	Owner
EP08859355	2008-12-05	EP2227910	2018-06-20	DE	Reducing media stream delay through independent decoder clocks	Granted	Triton US VP Acquisition Co.
EP07811811	2007-02-28	1989885	12/20/2016	DE	Systems and methods for transcoding bit streams	Issued	Triton US VP Acquisition Co.
EP07756491	2007-02-28	1987677	3/5/2013	DE	Systems and methods for transcoding bit streams	Issued	Triton US VP Acquisition Co.
6850128.7	2006-11-09	1949688	5/14/2013	DE	Atomic channel changes in a switched digital video system	Issued	Triton US VP Acquisition Co.
DE602008004665 T	2008-08-07	EP2177037	1/18/2011	DE	Bewahrung von untertiteln durch videotranskodierun g	Issued	Triton US VP Acquisition Co.
DE602005021977 T	2005-09-08	DE6020050219 77	8/4/2010	DE	Plattenbasierter verarbeitungsmotor f√r bewegungsvideo	Issued	Triton US VP Acquisition Co.
EP07756849	2007-02-10	EP1982260	1/16/2018	EP	Method and system for streaming digital video content to a client in a digital video network	Issued	Triton US VP Acquisition Co.
EP07811811	2007-02-28	EP1989885	12/20/2016	EP	Systems and methods for transcoding bit streams	Issued	Triton US VP Acquisition Co.
EP07756491	2007-01-29	EP1987677	3/5/2013	EP	Systems and methods for transcoding bit streams	Issued	Triton US VP Acquisition Co.
EP06850128	2006-11-09	EP1949688	5/14/2013	EP	Atomic channel changes in a switched digital video system	Issued	Triton US VP Acquisition Co.
EP08795100	2008-08-07	EP2177037	1/18/2011	EP	Preserving captioning through video transcoding	Issued	Triton US VP Acquisition Co.
EP05802648	2005-09-08	EP1797721	6/22/2010	EP	Slab-based processing engine for motion video	Issued	Triton US VP Acquisition Co.

App. No.	App. Date	Reg. No.	Reg. Date	Country	Title	Status	Оwner
EP10190879	2008-08-07	EP2373050	10/9/2012	EP	Preserving captioning through video transcoding	Lapsed	Triton US VP Acquisition Co.
EP08859355	2008-12-05	EP2227910	06/20/2018	EP	Reducing media stream delay through independent decoder clocks	Issued	Triton US VP Acquisition Co.
EP09790330	2009-07-13			EP	Splicing of encrypted video/audio content	Pending	Triton US VP Acquisition Co.
EP02794331	2002-12-20			EP	Trick modes for compressed video streams	Pending	Triton US VP Acquisition Co.
EP06750036	2006-04-13			EP	Scene-by-scene digital video processing	Pending	Triton US VP Acquisition Co.
EP16739604	2016-06-10			EP	Transitioning between broadcast and unicast streams	Pending	Triton US VP Acquisition Co.
EP00938251	2000-06-09	EP1186160	3/12/2002	EP	Systems and methods for adaptive scheduling and dynamic bandwidth resource allocation management in a digital broadband delivery system	Revoked	Triton US VP Acquisition Co.
EP08743986	2008-03-18	EP2137968	12/29/2009	EP	Switched digital video client reverse channel traffic reduction	Revoked	Triton US VP Acquisition Co.
EP08859355	2008-12-05	EP2227910	2018-06-20	FR	Reducing media stream delay through independent decoder clocks	Granted	Triton US VP Acquisition Co.
EP07811811	2007-02-28	1989885	12/20/2016	FR	Systems and methods for transcoding bit streams	Issued	Triton US VP Acquisition Co.
EP07756491	2007-02-28	1987677	3/5/2013	FR	Systems and methods for transcoding bit streams	Issued	Triton US VP Acquisition Co.

App. No.	App. Date	Reg. No.	Reg. Date	Country	Title	Status	Owner
6850128.7	2006-11-09	1949688	5/14/2013	FR	Atomic Channel Changes In a Switched Digital Video System	Issued	Triton US VP Acquisition Co.
8795100	2008-08-07	2177037	1/18/2011	FR	Preserving captioning through video transcoding	Issued	Triton US VP Acquisition Co.
EP05802648	2005-09-08	1797721	6/22/2010	FR	Slab-based processing engine for motion video	Issued	Triton US VP Acquisition Co.
EP08859355	2008-12-05	EP2227910	2018-06-20	GB	Reducing media stream delay through independent decoder clocks	Granted	Triton US VP Acquisition Co.
EP07811811	2007-02-28	1989885	12/20/2016	GB	Systems and methods for transcoding bit streams	Issued	Triton US VP Acquisition Co.
EP07756491	2007-02-28	1987677	3/5/2013	GB	Systems and methods for transcoding bit streams	Issued	Triton US VP Acquisition Co.
6850128.7	2006-11-09	1949688	5/14/2013	GB	Atomic channel changes in a switched digital video system	Issued	Triton US VP Acquisition Co.
8795100	2008-08-07	2177037	1/18/2011	GB	Preserving captioning through video transcoding	Issued	Triton US VP Acquisition Co.
EP05802648	2005-09-08	1797721	6/22/2010	GB	Slab-based processing engine for motion video	Issued	Triton US VP Acquisition Co.
IN4800/DELNP/2 010	2010-07-02			IN	Systems and methods of reducing media stream delay through independent decoder clocks	Pending	Triton US VP Acquisition Co.
EP05802648	2005-09-08	1797721	6/22/2010	SE	Slab-based processing engine for motion video	Abandoned	Triton US VP Acquisition Co.
8795100	2008-08-07	2177037	1/18/2011	SE	Preserving captioning through video transcoding	Issued	Triton US VP Acquisition Co.

App. No.	App. Date	Reg. No.	Reg. Date	Country	Title	Status	Оwner
US10/956,432	2004-09-30	US8789119	7/21/2014	US	Statistical remultiplexer performance for video on demand applications by use of metadata	Issued	Triton US VP Acquisition Co.
US11/278,524	2006-04-03	US7796598	9/13/2010	US	Synchronizing redundant video streams encapsulated in ip/udp packets	Issued	Triton US VP Acquisition Co.
US11/829,492	2007-07-27	US8069464	11/28/2011	US	Architecture for scaling just-in-time placement of advertising content	Issued	Triton US VP Acquisition Co.
US11/952,969	2007-12-07	US8578432	11/4/2013	US	Policy control over switched delivery networks	Issued	Triton US VP Acquisition Co.
US11/872,684	2007-10-15	US8270488	9/17/2012	US	Using black detection to improve video splicing	Issued	Triton US VP Acquisition Co.
US12/022,099	2008-01-29	US8565318	10/21/2013	US	Restamping transport streams to avoid vertical rolls	Issued	Triton US VP Acquisition Co.
US12/434,480	2009-05-01	US9197857	11/23/2015	US	Ip-based stream splicing with content-specific splice points	Issued	Triton US VP Acquisition Co.
US11/673,484	2007-02-09	US8713195	4/28/2014	US	Method and system for streaming digital video content to a client in a digital video network	Issued	Triton US VP Acquisition Co.
US12/328,071	2008-12-04	US8111971	2/6/2012	US	Systems and methods of reducing media stream delay through independent decoder clocks	Issued	Triton US VP Acquisition Co.
US12/138,257	2008-06-12	US8613013	12/16/2013	US	Ad splicing using re-quantization variants	Issued	Triton US VP Acquisition Co.
US12/175,101	2008-07-17	US8781003	7/14/2014	US	Splicing of encrypted video/audio content	Issued	Triton US VP Acquisition Co.

App. No.	App. Date	Reg. No.	Reg. Date	Country	Title	Status	Owner
US12/416,338	2009-04-01	US8655143	2/17/2014	US	Supplementary buffer construction in real-time applications without increasing channel change delay	Issued	Triton US VP Acquisition Co.
US12/569,982	2009-09-30	US8731000	5/19/2014	US	Decoding earlier frames with dts/pts backward extrapolation	Issued	Triton US VP Acquisition Co.
US14/282,113	2014-05-20	US9832515	11/27/2017	US	Dts/pts backward extrapolation for stream transition events	Issued	Triton US VP Acquisition Co.
US12/533,197	2009-07-31	US8201204	6/11/2012	US	Minimizing black video segments during ad insertion	Issued	Triton US VP Acquisition Co.
US11/365,286	2006-03-01	US8068541	11/28/2011	US	Systems and methods for transcoding bit streams	Issued	Triton US VP Acquisition Co.
US08/939,539	1997-09-29	US6618096	9/8/2003	US	System and method for adaptively balancing quadrature modulators for vestigial-sideband generation	Issued	Triton US VP Acquisition Co.
US09/368,561	1999-08-05	US6543051	3/31/2003	US	Emergency alert system	Issued	Triton US VP Acquisition Co.
US10/404,359	2003-04-01	US7159230	1/1/2007	US	Emergency alert system	Issued	Triton US VP Acquisition Co.
US09/590,521	2000-06-09	US6986156	1/9/2006	US	Systems and methods for adaptive scheduling and dynamic bandwidth resource allocation management in a digital broadband delivery system	Issued	Triton US VP Acquisition Co.
US09/692,986	2000-10-20	US6978310	12/19/2005	US	Media-on-demand catalog viewing preference system	Issued	Triton US VP Acquisition Co.

App. No.	App. Date	Reg. No.	Reg. Date	Country	Title	Status	Owner
US10/038,943	2001-12-31	US7274857	9/24/2007	US	Trick modes for compressed video streams	Issued	Triton US VP Acquisition Co.
US11/832,391	2007-08-01	US8358916	1/21/2013	US	Annotations for trick modes of video streams with simultaneous processing and display	Issued	Triton US VP Acquisition Co.
US11/843,711	2007-08-23	US8301016	10/29/2012	US	Decoding and output of frames for video trick modes	Issued	Triton US VP Acquisition Co.
US10/266,827	2002-10-08	US7053960	5/29/2006	US	Systems and methods for adjusting image contrast	Issued	Triton US VP Acquisition Co.
US11/692,457	2007-03-28	US8370889	2/4/2013	US	Switched digital video client reverse channel traffic reduction	Issued	Triton US VP Acquisition Co.
US12/483,925	2009-06-12	US8886022	11/10/2014	US	Picture interdependencies signals in context of mmco to assist stream manipulation	Issued	Triton US VP Acquisition Co.
US14/501,905	2014-09-30	US9819899	11/13/2017	US	Signaling tier information to assist mmco stream manipulation	Issued	Triton US VP Acquisition Co.
US12/672,434	2008-08-07	US9426479	8/22/2016	US	Preserving captioning through video transcoding	Issued	Triton US VP Acquisition Co.
US10/935,991	2004-09-08	US7881546	1/31/2011	US	Slab-based processing engine for motion video	Issued	Triton US VP Acquisition Co.
US11/106,906	2005-04-15	US7864840	1/3/2011	US	Scene-by-scene digital video processing	Issued	Triton US VP Acquisition Co.
US13/750,555	2013-01-25	US9241197	1/18/2016	US	System and method for video delivery over heterogeneous networks with scalable video coding for multiple subscriber tiers	Issued	Triton US VP Acquisition Co.

App. No.	App. Date	Reg. No.	Reg. Date	Country	Title	Status	Owner
US13/842,661	2013-03-15	US9154819	10/5/2015	US	Video content priority aware congestion management	Issued	Triton US VP Acquisition Co.
US10/981,053	2004-11-04			US	Bandwidth management of services with random access functionality	Lapsed	Triton US VP Acquisition Co.
US11/365,182	2006-03-01			US	Systems and methods for transcoding bit streams	Lapsed	Triton US VP Acquisition Co.
US11/164,115	2005-11-10			US	Atomic channel changes in a switched digital video system	Lapsed	Triton US VP Acquisition Co.
US12/389,458	2009-02-20			US	Determining parameters for trick modes of video programs	Lapsed	Triton US VP Acquisition Co.
US12/389,588	2009-02-20			US	Trick mode operations	Lapsed	Triton US VP Acquisition Co.
US12/389,453	2009-02-20			US	Annotations for supporting trick mode operations	Lapsed	Triton US VP Acquisition Co.
US15/607,542	2017-05-29			US	Insertion of selectively reencoded frames from a different encoder back into H.264 video	Pending	Triton US VP Acquisition Co.
US15/619,938	2017-06-12			US	Method and Device for Sharing Segmented Video Content Across Multiple Manifests	Pending	Triton US VP Acquisition Co.
US14/795,353	2015-07-09			US	Transitioning between broadcast and unicast streams	Pending	Triton US VP Acquisition Co.
WOUS200808533 6	2008-12-03			WO	Policy control over switched delivery networks	Lapsed	Triton US VP Acquisition Co.
WOUS200903227 7	2009-01-28			WO	Restamping transport streams to avoid vertical rolls	Lapsed	Triton US VP Acquisition Co.

App. No.	App. Date	Reg. No.	Reg. Date	Country	Title	Status	Owner
WOUS200706195 7	2007-02-10			WO	Method and system for streaming digital video content to a client in a digital video network	Lapsed	Triton US VP Acquisition Co.
WOUS200808561 3	2008-12-05			WO	Reducing media stream delay tgrough independent decoder clocks	Lapsed	Triton US VP Acquisition Co.
WOUS200905037 8	2009-07-13			WO	Splicing of encrypted video/audio content	Lapsed	Triton US VP Acquisition Co.
WOUS200706292 9	2007-02-28			WO	Systems and methods for transcoding bit streams	Lapsed	Triton US VP Acquisition Co.
WOUS200706119 6	2007-01-29			WO	Systems and methods for transcoding bit streams	Lapsed	Triton US VP Acquisition Co.
WOUS200606069 5	2006-11-09			WO	Atomic channel changes in a switched digital video system	Lapsed	Triton US VP Acquisition Co.
WOUS0015952	2000-06-09			WO	Systems and methods for adaptive scheduling and dynamic bandwidth resource allocation management in a digital broadband delivery system	Lapsed	Triton US VP Acquisition Co.
WOUS0240828	2002-12-20			WO	Trick modes for compressed video streams	Lapsed	Triton US VP Acquisition Co.
WOUS0331747	2003-10-07			WO	Systems and methods for adjusting image contrast	Lapsed	Triton US VP Acquisition Co.
WOUS200805729 7	2008-03-18			WO	Switched digital video client reverse channel traffic reduction	Lapsed	Triton US VP Acquisition Co.
WOUS200904723 7	2009-06-12			WO	Picture interdependencies signals in context of mmco to assist stream manipulation	Lapsed	Triton US VP Acquisition Co.

App. No.	App. Date	Reg. No.	Reg. Date	Country	Title	Status	Owner
WOUS200800947 6	2008-08-07			WO	Preserving captioning through video transcoding	Lapsed	Triton US VP Acquisition Co.
WOUS200503183 6	2005-09-08			WO	Slab-based processing engine for motion video	Lapsed	Triton US VP Acquisition Co.
WOUS200601386 2	2006-04-13			WO	Scene-by-scene digital video processing	Lapsed	Triton US VP Acquisition Co.
WOUS201603680 6	2016-06-10			WO	Transitioning between broadcast and unicast streams	Lapsed	Triton US VP Acquisition Co.
WOIB2018034448	2017-05-24			WO	Insertion of selectively re- encoded frames from a different encoder back into H.264 video	Granted	Triton US VP Acquisition Co.

**RECORDED: 10/30/2018**