505809727 12/09/2019

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT5856556

		NE	W ASSIGNMENT		
NATURE OF CONVEYANCE:		AS	ASSIGNMENT		
CONVEYING PARTY	ΔΑΤΑ	•			
		Nam	ne		Execution Date
TIMOTHY INNES					07/30/2018
OLIVER ELLIOTT					08/14/2018
SAMUEL SCRUGGS					07/30/2018
RECEIVING PARTY D	ΑΤΑ				
Name:	AT&T	Intellectual	Property I, L.P.		
Street Address:		. Peachtree			
Internal Address:	Suite 4	Suite 4000			
City:	Atlanta	Atlanta			
State/Country:	GEOR	GIA			
Postal Code:	30308				
Property TypeApplication Number:1670		16707082	Number		
Application Number:		16707082			
	DATA				
CORRESPONDENCE					
		(908)532-	1991		
Fax Number: Correspondence will	be sent to	o the e-ma	nil address first; if that is u		
Fax Number: <i>Correspondence will</i> <i>using a fax number, i</i>	be sent to	o the e-ma d; if that is	nil address first; if that is u s unsuccessful, it will be s		
Fax Number: Correspondence will	be sent to	o the e-ma d; if that is 90853219	ail address first; if that is u s unsuccessful, it will be s 18		
Fax Number: <i>Correspondence will</i> <i>using a fax number, in</i> Phone:	be sent te f providee	o the e-ma d; if that is 90853219 jodi@hcip	ail address first; if that is u s unsuccessful, it will be s 18	ent viá	a US Mail.
Fax Number: <i>Correspondence will</i> <i>using a fax number, i</i> Phone: Email:	be sent te f providee	o the e-ma d; if that is 90853219 jodi@hcip	ail address first; if that is u s unsuccessful, it will be s 18 law.com GAL DEPARTMENT - H&C	ent viá	a US Mail.
Fax Number: <i>Correspondence will using a fax number, in</i> Phone: Email: Correspondent Name	be sent te f providee	o the e-ma d; if that is 90853219 jodi@hcip AT&T LE0	ail address first; if that is u s unsuccessful, it will be s 18 law.com GAL DEPARTMENT - H&C T WAY	ent viá	a US Mail.
Fax Number: Correspondence will using a fax number, in Phone: Email: Correspondent Name Address Line 1:	be sent te f providee	o the e-ma d; if that is 90853219 jodi@hcip AT&T LEC ONE AT& ROOM 24	ail address first; if that is u s unsuccessful, it will be s 18 law.com GAL DEPARTMENT - H&C T WAY	ent vi a ATTN:	a US Mail.
Fax Number: Correspondence will using a fax number, in Phone: Email: Correspondent Name Address Line 1: Address Line 2:	be sent to f provideo :	o the e-ma d; if that is 90853219 jodi@hcip AT&T LEC ONE AT& ROOM 2A BEDMINS	ail address first; if that is us s unsuccessful, it will be s 18 Iaw.com GAL DEPARTMENT - H&C T WAY	ent via	a US Mail.
Fax Number: <i>Correspondence will</i> <i>using a fax number, in</i> Phone: Email: Correspondent Name Address Line 1: Address Line 2: Address Line 4:	be sent to f provided : :	o the e-ma d; if that is 90853219 jodi@hcip AT&T LEC ONE AT& ROOM 2A BEDMINS 201	ail address first; if that is us s unsuccessful, it will be s alaw.com GAL DEPARTMENT - H&C T WAY A-207 STER, NEW JERSEY 07921	ent via	a US Mail.
Fax Number: Correspondence will using a fax number, in Phone: Email: Correspondent Name Address Line 1: Address Line 2: Address Line 4:	be sent to f provided : :	o the e-ma d; if that is 90853219 jodi@hcip AT&T LEC ONE AT& ROOM 2A BEDMINS 201 JOI	ail address first; if that is us s unsuccessful, it will be s alaw.com GAL DEPARTMENT - H&C T WAY A-207 STER, NEW JERSEY 07921 7-0201CON/ 27.5994USC1	ent via	a US Mail.
Fax Number: Correspondence will using a fax number, in Phone: Email: Correspondent Name Address Line 1: Address Line 2: Address Line 2: Address Line 4:	be sent to f provided : :	o the e-ma d; if that is 90853219 jodi@hcip AT&T LEC ONE AT& ROOM 2A BEDMINS 201 JOC JOC	ail address first; if that is us s unsuccessful, it will be s alaw.com GAL DEPARTMENT - H&C T WAY A-207 STER, NEW JERSEY 07921 7-0201CON/ 27.5994USC1 DI L. HARTMAN	ent via	a US Mail.
Fax Number: <i>Correspondence will</i> <i>using a fax number, in</i> Phone: Email: Correspondent Name Address Line 1: Address Line 2: Address Line 2: Address Line 4: ATTORNEY DOCKET N NAME OF SUBMITTER SIGNATURE:	be sent to f provided : :	o the e-ma d; if that is 90853219 jodi@hcip AT&T LEC ONE AT& ROOM 2A BEDMINS 201 JOC JOC	ail address first; if that is us s unsuccessful, it will be s alaw.com GAL DEPARTMENT - H&C T WAY A-207 STER, NEW JERSEY 07921 7-0201CON/ 27.5994USC1 DI L. HARTMAN di L. Hartman/	ent via	a US Mail.
Fax Number: <i>Correspondence will</i> <i>using a fax number, in</i> Phone: Email: Correspondent Name Address Line 1: Address Line 2: Address Line 2: Address Line 4: ATTORNEY DOCKET N NAME OF SUBMITTER SIGNATURE: DATE SIGNED:	be sent to f provided : : NUMBER: : cuted_Ass	o the e-ma d; if that is 90853219 jodi@hcip AT&T LEC ONE AT& ROOM 2A BEDMINS 201 JOI JOI 12/0 signment-li	ail address first; if that is us s unsuccessful, it will be s law.com GAL DEPARTMENT - H&C T WAY A-207 STER, NEW JERSEY 07921 7-0201CON/ 27.5994USC1 DI L. HARTMAN di L. Hartman/ 09/2019	ent via	a US Mail.

source=5994US01_Executed_Assignment-Elliott#page1.tif
source=5994US01_Executed_Assignment-Elliott#page2.tif
source=5994US01_Executed_Assignment-Scruggs#page1.tif
source=5994US01_Executed_Assignment-Scruggs#page2.tif

ASSIGNMENT

WHEREAS, I. Timothy Innes, residing at 314 6th Street, N.E. #3, Atlanta, Georgia 30308, US, am listed as an inventor on a patent application entitled "Optical Networking With Hybrid Optical Vortices," having AT&T Docket No. 2017-0201, the patent application to be filed in the United States Patent & Trademark Office; and

WHEREAS, AT&T Intellectual Property I, L.P., a partnership organized and existing under and by virtue of the laws of the State of Delaware, and having an office and place of business at 675 W. Peachtree Street, Suite 4000, Atlanta, GA 30308 (hereinafter referred to as "Assignee"), desires to acquire the entire right, title and interest for the United States of America and elsewhere throughout the world in and to said invention and the patent application identified above, including any and all divisions and continuations thereof and any and all Letters Patent which may be granted thereon, including any and all renewals, reissues and prolongations thereto;

NOW THEREFORE, be it known that for and in consideration of the sum of Ten Dollars (\$10.00) and other good and valuable consideration the receipt of which from Assignee is hereby acknowledged, I, as Assignor, have sold, assigned, transferred, and set over, and do hereby sell, assign, transfer, and set over unto the Assignee, its lawful successors and assigns, my entire right, title, and interest in and to this invention and this non-provisional application, and all divisions, substitutions, and continuations thereof; and all Letters Patent of the United States which may be granted thereon, and all reexaminations and reissues thereof; and all rights to claim priority on the basis of the above provisional application (if any), as well as all rights to claim priority on the basis of this application; and all applications for Letters Patent which may hereafter be filed for this invention in any foreign country and all Letters Patent which may be granted on this invention in any foreign country, including certificates of inventions, utility models, industrial design protection, design patent protection, and other governmental grants or issuances; and all extensions, renewals, prolongations, and reissues thereof; to have and to hold for the sole and exclusive use and benefit of the Assignee, its successors and assigns, to the full end of the term and terms for all such patents;

AND, I HEREBY authorize and request the Commissioner of Patents and Trademarks of the United States and any official of any foreign country whose duty it is to issue patents on applications as described above, to issue all Letters Patent for this invention to Assignee, its successors and assigns, in accordance with the terms of this Assignment;

AND, I HEREBY covenant that I have the full right to convey the interest assigned by this Assignment, and I have not executed and will not execute any assignment, sale, license, agreement, or encumbrance in conflict with this Assignment;

AND, I HEREBY further covenant and agree, for the Assignor and the Assignor's legal representatives, that I will, without further consideration, communicate with Assignee, its successors and assigns, any facts known to us respecting this invention; assist the Assignee in the prosecution of the patent application identified above; assist in the making and prosecution of any other patent applications that the Assignee may elect to make covering the invention identified above; testify in any interference, litigation, or other legal proceeding; sign all lawful papers when called upon to do so; execute and deliver any and all papers that may be necessary or desirable to perfect the title to this invention in said Assignee, its successors or assigns; execute all divisional, continuation, and reissue applications; make all rightful oaths and generally do everything possible to aid Assignee, to obtain and enforce proper patent protection for this invention in the United States and any foreign country, it being understood that any expense incident to the execution of such papers shall be borne by the Assignee; and hereby instruct, and further covenant and agree to bind my heirs, legal representatives, and assigns, to do same, without compensation, but at the expense of Assignee or its representatives.

Page 1 of 2

AND, I HEREBY consent that a copy of this assignment shall be deemed a full legal and formal equivalent of any document which may be required in any country in proof of the right of AT&T Intellectual Property I, L.P. to apply for patent or other form of protection for said inventions and to claim the aforesaid benefit of the right of priority.

This Assignment may be executed in any number of counterparts, each of which when so executed and delivered shall be deemed an original, and such counterparts together shall constitute one and the same instrument. A facsimile copy of this Assignment, or any form of an electronic copy of this Assignment, including the signature pages hereto, shall be deemed to be an original.

July IN TESTIMONY	WHEREOF, I have hereunto set my hands, this 30 day	/ of
STATE OF LONG AL	DimôthyUrines)) ss.)	

On this day of 2018, before me a Notary Public in and for the above County and State, personally appeared **Dimothy Innes**, and acknowledged the execution of the foregoing assignment as his/her free act and deed for the purpose herein set forth.

ISEAUL

<u>A</u>

Notary Public

My Commission Expires February 16, 2020

ASSIGNMENT

WHEREAS, I, Oliver Elliott, residing at 6204 Renaissance Way, N.E., Atlanta, Georgia 30308, US, am listed as an inventor on a patent application entitled "Optical Networking With Hybrid Optical Vortices," having AT&T Docket No. 2017-0201, the patent application to be filed in the United States Patent & Trademark Office; and

WHEREAS, AT&T Intellectual Property I, L.P., a partnership organized and existing under and by virtue of the laws of the State of Delaware, and having an office and place of business at 675 W. Peachtree Street, Suite 4000, Atlanta, GA 30308 (hereinafter referred to as "Assignee"), desires to acquire the entire right, title and interest for the United States of America and elsewhere throughout the world in and to said invention and the patent application identified above, including any and all divisions and continuations thereof and any and all Letters Patent which may be granted thereon, including any and all renewals, reissues and prolongations thereto;

NOW THEREFORE, be it known that for and in consideration of the sum of Ten Dollars (\$10.00) and other good and valuable consideration the receipt of which from Assignee is hereby acknowledged, I, as Assignor, have sold, assigned, transferred, and set over, and do hereby sell, assign, transfer, and set over unto the Assignee, its lawful successors and assigns, my entire right, title, and interest in and to this invention and this non-provisional application, and all divisions, substitutions, and continuations thereof; and all Letters Patent of the United States which may be granted thereon, and all reexaminations and reissues thereof; and all rights to claim priority on the basis of the above provisional application (if any), as well as all rights to claim priority on the basis of this application; and all applications for Letters Patent which may hereafter be filed for this invention in any foreign country and all Letters of inventions, utility models, industrial design protection, design patent protection, and other governmental grants or issuances; and all extensions, renewals, prolongations, and reissues thereof; to have and to hold for the sole and exclusive use and benefit of the Assignee, its successors and assigns, to the full end of the term and terms for all such patents;

AND, I HEREBY authorize and request the Commissioner of Patents and Trademarks of the United States and any official of any foreign country whose duty it is to issue patents on applications as described above, to issue all Letters Patent for this invention to Assignee, its successors and assigns, in accordance with the terms of this Assignment;

AND, I HEREBY covenant that I have the full right to convey the interest assigned by this Assignment, and I have not executed and will not execute any assignment, sale, license, agreement, or encumbrance in conflict with this Assignment;

AND, I HEREBY further covenant and agree, for the Assignor and the Assignor's legal representatives, that I will, without further consideration, communicate with Assignee, its successors and assigns, any facts known to us respecting this invention; assist the Assignee in the prosecution of the patent application identified above; assist in the making and prosecution of any other patent applications that the Assignee may elect to make covering the invention identified above; testify in any interference, litigation, or other legal proceeding; sign all lawful papers when called upon to do so; execute and deliver any and all papers that may be necessary or desirable to perfect the title to this invention in said Assignee, its successors or assigns; execute all divisional, continuation, and reissue applications; make all rightful oaths and generally do everything possible to aid Assignee, to obtain and enforce proper patent protection for this invention in the United States and any foreign country, it being understood that any expense incident to the execution of such papers shall be borne by the Assignee; and hereby instruct, and further covenant and agree to bind my heirs, legal representatives, and assigns, to do same, without compensation, but at the expense of Assignee or its representatives.

Page 1 of 2

AND, I HEREBY consent that a copy of this assignment shall be deemed a full legal and formal equivalent of any document which may be required in any country in proof of the right of AT&T Intellectual Property I, L.P. to apply for patent or other form of protection for said inventions and to claim the aforesaid benefit of the right of priority.

This Assignment may be executed in any number of counterparts, each of which when so executed and delivered shall be deemed an original, and such counterparts together shall constitute one and the same instrument. A facsimile copy of this Assignment, or any form of an electronic copy of this Assignment, including the signature pages hereto, shall be deemed to be an original.

Avgust IN TESTIMONY WHEREOF, I have hereunto set my hands this 4 day of 2018.

Oliver Elliott

STATE OF LEXAS) ss. COUNTY OF 1) 1

On this 4^{th} day of Augus, 2018, before me a Notary Public in and for the above County and State, personally appeared Oliver Elliott, and acknowledged the execution of the foregoing assignment as his/her free act and deed for the purpose herein set forth.



Nummer +



ASSIGNMENT

WHEREAS, I, Samuel Scruggs, residing at 4760 Ashwell Lane, Suwanee, Georgia 30024, US, am listed as an inventor on a patent application entitled "Optical Networking With Hybrid Optical Vortices," having AT&T Docket No. 2017-0201, the patent application to be filed in the United States Patent & Trademark Office; and

WHEREAS, AT&T Intellectual Property I, L.P., a partnership organized and existing under and by virtue of the laws of the State of Delaware, and having an office and place of business at 675 W. Peachtree Street, Suite 4000, Atlanta, GA 30308 (hereinafter referred to as "Assignee"), desires to acquire the entire right, title and interest for the United States of America and elsewhere throughout the world in and to said invention and the patent application identified above, including any and all divisions and continuations thereof and any and all Letters Patent which may be granted thereon, including any and all renewals, reissues and prolongations thereto;

NOW THEREFORE, be it known that for and in consideration of the sum of Ten Dollars (\$10.00) and other good and valuable consideration the receipt of which from Assignee is hereby acknowledged, I, as Assignor, have sold, assigned, transferred, and set over, and do hereby sell, assign, transfer, and set over unto the Assignee, its lawful successors and assigns, my entire right, title, and interest in and to this invention and this non-provisional application, and all divisions, substitutions, and continuations thereof; and all Letters Patent of the United States which may be granted thereon, and all reexaminations and reissues thereof; and all rights to claim priority on the basis of the above provisional application (if any), as well as all rights to claim priority on the basis of this application; and all applications for Letters Patent which may hereafter be filed for this invention in any foreign country and all Letters Patent which may be granted on this invention in any foreign country, including certificates of inventions, utility models, industrial design protection, design patent protection, and other governmental grants or issuances; and all extensions, renewals, prolongations, and reissues thereof; to have and to hold for the sole and exclusive use and benefit of the Assignee, its successors and assigns, to the full end of the term and terms for all such patents;

AND, I HEREBY authorize and request the Commissioner of Patenis and Trademarks of the United States and any official of any foreign country whose duty it is to issue patents on applications as described above, to issue all Letters Patent for this invention to Assignee, its successors and assigns, in accordance with the terms of this Assignment;

AND, I HEREBY covenant that I have the full right to convey the interest assigned by this Assignment, and I have not executed and will not execute any assignment, sale, license, agreement, or encumbrance in conflict with this Assignment;

AND, I HEREBY further covenant and agree, for the Assignor and the Assignor's legal representatives, that I will, without further consideration, communicate with Assignee, its successors and assigns, any facts known to us respecting this invention; assist the Assignee in the prosecution of the patent application identified above; assist in the making and prosecution of any other patent applications that the Assignee may elect to make covering the invention identified above; testify in any interference, litigation, or other legal proceeding; sign all lawful papers when called upon to do so; execute and deliver any and all papers that may be necessary or desirable to perfect the title to this invention in said Assignee, its successors or assigns; execute all divisional, continuation, and reissue applications; make all rightful oaths and generally do everything possible to aid Assignee, to obtain and enforce proper patent protection for this invention in the United States and any foreign country, it being understood that any expense incident to the execution of such papers shall be borne by the Assignee; and hereby instruct, and further covenant and agree to bind my heirs, legal representatives.

Page 1 of 2

AND, I HEREBY consent that a copy of this assignment shall be deemed a full legal and formal equivalent of any document which may be required in any country in proof of the right of AT&T Intellectual Property I, L.P. to apply for patent or other form of protection for said inventions and to claim the aforesaid benefit of the right of priority.

This Assignment may be executed in any number of counterparts, each of which when so executed and delivered shall be deemed an original, and such counterparts together shall constitute one and the same instrument. A facsimile copy of this Assignment, or any form of an electronic copy of this Assignment, including the signature pages hereto, shall be deemed to be an original.

	WHEREOF, I have hereunto set my hands this day of
<u></u> 2018.	
	Samuel Scruggs
STATE OF COUNCIL)

) ss. }

On this <u>30</u> day of <u>July</u>, 2018, before me a Notary Public in and for the above County and State, personally appeared Samuel Scruggs, and acknowledged the execution of the foregoing assignment as his/her free act and deed for the purpose herein set forth.



COUNTY OF FUITO

<u>Itale</u>	z L	Bun
Notary Public	eppnus	02/02/00/9

PATENT REEL: 051215 FRAME: 0560

RECORDED: 12/09/2019

Page 2 of 2