

PATENT ASSIGNMENT COVER SHEET

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 Stylesheet Version v1.2

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SUBMISSION TYPE:	NEW ASSIGNMENT	
NATURE OF CONVEYANCE:	ASSIGNMENT	
CONVEYING PARTY DATA		
	Name	Execution Date
	ANALYTICAL GRAPHICS, INC.	06/14/2019
RECEIVING PARTY DATA		
Name:	CESIUM GS, INC.	
Street Address:	21 S 11TH STREET	
City:	PHILADELPHIA	
State/Country:	PENNSYLVANIA	
Postal Code:	19107	
PROPERTY NUMBERS Total: 3		
Property Type	Number	
Patent Number:	9865085	
Application Number:	15829786	
Patent Number:	10438092	
CORRESPONDENCE DATA		
Fax Number:	(650)812-3444	
<i>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.</i>		
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Correspondent Name:	MYRNA M. SCHELLING	
Address Line 1:	CARR & FERRELL LLP	
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ATTORNEY DOCKET NUMBER:	ANALGR	
NAME OF SUBMITTER:	ANDREW F. THOMAS	
SIGNATURE:	/Andrew F. Thomas/	
DATE SIGNED:	04/17/2020	
Total Attachments: 10		
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**AMENDED AND RESTATED
INTELLECTUAL PROPERTY ASSIGNMENT AND TRANSFER AGREEMENT**

This Amended and Restated Intellectual Property Assignment and Transfer Agreement (“**Agreement**”) is made as of July 3, 2019 (“**Effective Date**”) between Cesium GS, Inc. (“**Cesium**”), and Analytical Graphics, Inc. (“**AGI**”). In consideration of the mutual promises and covenants contained in this Agreement, the parties agree as follows:

BACKGROUND

A. AGI has developed, manufactures and owns intellectual property rights in certain technology that provides dynamic analysis and traffic management of satellites and unmanned air systems, and through Cesium, AGI wishes to start a new business line.

B. AGI desires to assign to Cesium all Intellectual Property Rights in and to the Assigned Property throughout the world and to do all such things as may be reasonably necessary to vest such Intellectual Property Rights in Cesium, including executing this Agreement.

C. AGI and Cesium executed the Intellectual Property Assignment and Transfer Agreement dated as of June 14, 2019 (the “**Original Agreement**”) and the parties thereto desire to amend and restate the Original Agreement in its entirety as set forth herein.

AGREEMENT

For and in consideration of the mutual promises and covenants set forth in this Agreement and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties agree as follows:

1. Definitions

1.1 “**Assigned Property**” means the property listed in Exhibit A and all Intellectual Property and Intellectual Property Rights forming a part of, embodied, in or necessary for use of the property.

1.2 “**Intellectual Property**” means all technology and intellectual property, regardless of form, including without limitation: published and unpublished works of authorship, such as audiovisual works, collective works, computer programs, compilations, databases, derivative works, literary works, maskworks, and sound recordings (“**Works of Authorship**” protected by copyrights); inventions and discoveries, including without limitation articles of manufacture, business methods, compositions of matter, improvements, machines, methods, and processes and new uses for any of the preceding items (“**Inventions**” protected by patents); design of objects that are not purely utilitarian, including without limitation creation of shapes, configuration or composition of pattern or color, or combination of pattern and color in three-dimensional form containing aesthetic value, or two- or three-dimensional patterns used to produce a product, industrial commodity or handicraft (“**Industrial designs**” protected by patents); words, names, symbols, devices, designs, and other designations, and combinations of the preceding items, used

to identify or distinguish a business, good, group, product, or service or to indicate a form of certification, including without limitation logos, product designs, trade dress and product features (“**Trademarks**”); information that is not generally known or readily ascertainable through proper means, whether tangible or intangible, including without limitation algorithms, customer lists, ideas, designs, formulas, know-how, methods, processes, programs, prototypes, systems, and techniques (“**Confidential Information**”) by which a business can obtain an economic advantage over competitors or customers by virtue of keeping it confidential (“**Trade Secrets**”).

1.3 “**Intellectual Property Rights**” means all rights in, arising out of, or associated with Intellectual Property in any jurisdiction, and which are the exclusive rights held by the owner of a copyright, patent, trademark, trade dress, or trade secret, including (i) the rights to copy, publicly perform, publicly display, distribute, adapt, translate, modify and create derivative works of copyrighted subject matter; (ii) the rights to exclude others from using, making, having made, selling, offering to sell, and importing patented subject matter and to practice patented methods, (iii) the rights to use and display any marks in association with businesses, products or services as an indication of ownership, origin, affiliation, or sponsorship; and (iv) the rights to apply for any of the foregoing rights, and all rights in those applications. Intellectual Property Rights also include any and all rights associated with particular information that are granted by law and that give the owner, independent of contract, exclusive authority to control use or disclosure of the information, including privacy rights and any rights in databases recognized by applicable law; and rights in, arising out of, or associated with a person’s name, voice, signature, photograph, or likeness, including without limitation rights of personality, privacy, and publicity (“**Personality Rights**”); rights of attribution and integrity and other moral rights of an author (“**Moral Rights**”); and rights in, arising out of, or associated with domain names (“**Domain Name Rights**”).

1.4 “**Pre-Existing Intellectual Property**” means any AGI owned Intellectual Property and Intellectual Property Rights in existence on or before June 14, 2019 that were not included in the Assigned Property Exhibit under the Original Agreement. Notwithstanding the foregoing, Pre-Existing Intellectual Property shall not include any Intellectual Property or Intellectual Property Rights contained within or practiced by AGI’s Orbit Determination Tool Kit (ODTK) or System Tool Kit (STK) family of products and modules.

2. Assignment and License.

2.1 Assignment. AGI hereby perpetually, irrevocably, and unconditionally assigns, transfers, and conveys to Cesium and its successors and assigns, all of AGI’s right, title, and interest in and to the Assigned Property. AGI further perpetually, irrevocably, and unconditionally assigns, transfers, and conveys to Cesium and its successors and assigns all claims for past, present and future infringement or misappropriation of the Intellectual Property Rights included in the Assigned Property, including all rights to sue for and to receive and recover all profits and damages accruing from an infringement misappropriation prior to the Effective Date as well as the right to grant releases for past infringements. AGI hereby waives and agrees not to enforce all Moral Rights and all Personality Rights that AGI may have in the Assigned Property.

2.2 License. Within twelve (12) months of execution of this Agreement, if either AGI or Cesium identifies or discovers any Pre-Existing Intellectual Property necessary for the conduct of Cesium's business as contemplated as of the Effective Date of the Original Agreement, AGI shall grant to Cesium a non-exclusive, worldwide, perpetual, irrevocable, royalty-free and fully paid up right and license (i) to use, copy, modify, distribute, make, have made, sell, offer for sale, import and otherwise exploit such Pre-Existing Intellectual Property solely for the conduct of Cesium's business as contemplated as of the Effective Date of the Original Agreement, and (ii) to sublicense such Pre-Existing Intellectual Property in connection with the distribution, marketing, licensing and sale of Cesium's and its affiliates' products and service offerings. If either AGI or Cesium identifies or discovers any such Pre-Existing Intellectual Property, the discovering party shall promptly notify the other party of the foregoing and the parties shall amend the Assigned Property Exhibit herein to identify such licensed Pre-Existing Intellectual Property.

3. Consideration. In consideration for the assignment made by AGI under this Agreement, AGI acknowledges the sufficiency of the equity Cesium has granted to AGI in the Asset Transfer Agreement between Cesium and AGI dated June 14, 2019, as well as the license rights Cesium has granted to AGI under the Intercompany Patent License Agreement and Reseller and OEM Agreement, each between Cesium and AGI and dated June 14, 2019.

4. Confidentiality. AGI must not use any Confidential Information assigned as part of the Assigned Property except for the benefit of Cesium. AGI must not disclose such Confidential Information to third parties. AGI must take reasonable steps to maintain the confidentiality and secrecy of such Confidential Information and to prevent the unauthorized use or disclosure of such Confidential Information. Any breach of these restrictions will cause irreparable harm to Cesium and will entitle Cesium to injunctive relief in addition to all applicable legal remedies.

5. Representations; Disclaimer of Warranties. AGI represents and warrants that, to its knowledge as of the Effective Date, that the Assigned Property constitutes the intellectual property owned or controlled by AGI that is necessary for Cesium to conduct its business as currently contemplated as of the Effective Date. AGI DOES NOT MAKE ANY OTHER WARRANTIES REGARDING THE ASSIGNED PROPERTY, AND EXPRESSLY DISCLAIMS ANY AND ALL WARRANTIES, WHETHER EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, SYSTEM INTEGRATION, DATA ACCURACY, TITLE AND/OR NON-INFRINGEMENT. WITHOUT LIMITING THE FOREGOING, AGI EXPRESSLY DOES NOT WARRANT THAT THE ASSIGNED PROPERTY WILL MEET CESIUM'S REQUIREMENTS OR THAT THE ASSIGNED PROPERTY WILL BE FUNCTIONAL, COMPLETE, OR ERROR FREE.

6. Limitation of Liability. AGI'S CUMULATIVE LIABILITY TO CESIUM, ITS OFFICERS, DIRECTORS, AGENTS, EMPLOYEES, OR AFFILIATES FOR ANY LOSS OR DAMAGES ARISING OUT OF OR RELATING TO THIS AGREEMENT, OR USE OF THE ASSIGNED PROPERTY SHALL NOT EXCEED THE AMOUNT OF ONE HUNDRED THOUSAND (\$100,000). THIS LIMITATION APPLIES TO ALL CAUSES OF ACTION OR CLAIMS IN THE AGGREGATE, INCLUDING, WITHOUT LIMITATION, BREACH OF CONTRACT,

BREACH OF WARRANTY, INDEMNITY, NEGLIGENCE, STRICT LIABILITY, MISREPRESENTATION, AND OTHER TORTS. NOTWITHSTANDING ANYTHING TO THE CONTRARY IN THIS AGREEMENT, THIS LIMITATION SHALL NOT APPLY TO LIABILITY ARISING FROM AGI'S FRAUD, INTENTIONAL MISREPRESENTATION OR WILLFUL MISCONDUCT. IN NO EVENT SHALL AGI BE LIABLE TO CESIUM, ITS OFFICERS, DIRECTORS, AGENTS, EMPLOYEES, OR AFFILIATES FOR ANY INDIRECT, INCIDENTAL, CONSEQUENTIAL, SPECIAL, EXEMPLARY, OR PUNITIVE DAMAGES OR LOST PROFITS, EVEN IF AGI HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

7. Further Assurances

7.1 Assistance. AGI will take all action and execute all documents as Cesium may reasonably request to effectuate the transfer of the Assigned Property and the vesting of complete and exclusive ownership of the Assigned Property in Cesium. In addition, AGI will, at the request and sole cost and expense of Cesium, but without additional compensation, promptly sign, execute, make, and do all such deeds, documents, acts, and things as Cesium may reasonably require:

(a) to apply for, obtain, register, maintain and vest in the name of Cesium alone (unless Cesium otherwise directs) Intellectual Property Rights protection relating to any or all of the Assigned Property in any country throughout the world, and when so obtained or vested, to renew and restore the same;

(b) to defend any judicial, opposition, or other proceedings in respect of such applications and any judicial, opposition, or other proceedings or petitions or applications for revocation of such Intellectual Property Rights; and

(c) to assist Cesium with the defense and enforcement of its rights in any registrations issuing from such applications and in all Intellectual Property Rights protection in the Intellectual Property.

7.2 Power of Attorney. If at any time Cesium is unable, for any reason, to secure AGI's signature on any letters patent, copyright, or trademark assignments or applications for registrations, or other documents or filings pertaining to any or all of the Assigned Property, whether because of AGI's unwillingness, or for any other reason whatsoever, AGI hereby irrevocably designates and appoints Cesium and its duly authorized officers and agents as its agents and attorneys-in-fact, to act for and on its behalf and stead to execute and file any and all such applications, registrations, and other documents and to do all other lawfully permitted acts to further the prosecution thereon with the same legal force and effect as if executed by AGI.

8. Miscellaneous

8.1 Injunctive Relief. A breach of this Agreement may result in irreparable harm to Cesium and a remedy at law for any such breach will be inadequate, and in recognition thereof, Cesium will be

entitled to injunctive and other equitable relief to prevent any breach or the threat of any breach of this Agreement by AGI without showing or proving actual damages.

8.2 Binding on Successors. This Agreement will inure to the benefit of, and be binding upon, the parties, together with their respective representatives, successors, and assigns, except that AGI may not assign this Agreement without the consent of Cesium. Cesium may assign this Agreement in its discretion.

8.3 Governing Law and Jurisdiction. This Agreement will be governed by, and construed in accordance with, the laws of the State of Delaware, without reference to its conflict of laws provisions. With respect to any dispute arising out of or related to this Agreement, the parties consent to the exclusive jurisdiction of, and venue in, the federal and state courts located in Newcastle County, Delaware.

8.4 Amendment and Waiver. This Agreement may not be amended or modified unless mutually agreed upon in writing by the parties and no waiver will be effective unless signed by the party from whom such waiver is sought. The waiver by any party of a breach of any provision of this Agreement will not operate or be construed as a waiver of any subsequent breach.

8.5 Severability. If any provision of this Agreement is held invalid by any court of competent jurisdiction, such invalidity will not affect the validity or operation of any other provision, and the invalid provision will be deemed severed from this Agreement.

8.6 Entire Agreement. This Agreement is the entire agreement concerning the subject matter hereof. It supersedes all prior and contemporaneous agreements, assurances, representations, and communications between the parties.

Analytical Graphics, Inc.

By: _____

Title: Officer

Cesium GS, Inc.

By: _____

Title: Chief Executive Officer

EXHIBIT A
ASSIGNED PROPERTY

PATENTS

1. "Columbus View" patent; US9153063 – "System and method for data rendering and transformation images in 2- and 3- dimensional images"
 - Granted October 6, 2015
2. "Sensor" patent; US9449424 – "Visualization of field of view obstruction by an ellipsoid"
 - Granted September 20, 2016
3. "Optimized 3D Tiles rendering" patent; US9865085 – "Systems and Methods for 3D Modeling Using Skipping Heuristics and Fusing"
 - Granted January 9, 2018
4. "Point cloud screen-space surface reconstruction" patent pending; Application No. 15/829,786 – "Systems and Methods for Real-Time Large-Scale Point Cloud Surface Reconstruction"
 - Filed on December 1, 2017
5. "Systems and Methods for Converting Massive Point Cloud Datasets to Hierarchical Storage Format" – provisional patent. Application number 62624309.
 - Filed January 31, 2018
6. "Point cloud tiling" patent pending; Application number 16/167,422 – "Systems and Methods for Converting Massive Point Cloud Datasets to Hierarchical Storage Format"
 - Filed October 30, 2018
7. "System and Methods for Rendering Vector Data on Static and Dynamic Surfaces using Screen Space Decals and a Depth Texture" – provisional patent. Application number 62/701,099
 - Filed July 20, 2018
8. "System and Method For Subdividing Large Polygon Mesh Datasets Into Hierarchical Subsets For Level-Of-Detail Use" – provisional patent. Application No. 62/822,234
 - Filed April 2, 2019
9. "System and Method For Converting Massive, Single-Material Mesh Datasets To Hierarchical Format" – provisional patent. Application No. 62/822,218
 - Filed April 2, 2019
10. "Systems and Methods For Culling Requests For Hierarchical Level Of Detail Content Over A Communications Network" – provisional patent. Application No. 62/837,381

- Filed April 23, 2019
- 11. “Systems and Methods For Prioritizing Requests For Hierarchical Level Of Detail Content Over A Communications Network” – provisional patent. Application No. 62/837,358**
- Filed April 23, 2019

SOFTWARE

1. CesiumJS

- Open-source 3D geospatial visualization library

2. Cesium ion SDK (GPU-based analytics)

- Commercial analytics built on top of CesiumJS for GPU-accelerated visibility computations (sensors) & computational shading (coverage), measurements, and related UI widgets.

3. Cesium ion 3D Tilers

- Commercial pipeline for generating 3D Tiles from a variety of input formats and data types, including:
 - Photogrammetry
 - CAD/BIM/3D models
 - Point clouds
 - 3D buildings
 - Vector data
 - OpenStreetMap
 - 3D “Tilers” also includes
 - Imagery (generates TMS / WMTS)
 - Terrain (generates Quantized Mesh)

4. Cesium World Terrain

- Source and processed dataset for global terrain and Sentinel-2 global imagery

5. Cesium ion Platform

- SaaS and Enterprise infrastructure for serving 3D content (such as Cesium World Terrain above) and tiling 3D content (using the above 3D Tilers) in the cloud. Includes user management, reporting, project creation, and scalability

6. Cesium Smart Construction 3D Viewer


UNITED STATES TRADEMARKS

1. Mark: Cesium


- a. Class: 09
- b. Filing Date: May 2, 2012
- c. Date of 1st Use: April 16, 2012

- d. Serial No.: 85/614,966
- e. Registration No.: 4,261,392
- f. Date of Registration: December 18, 2012
- 2. Mark: CESIUM ION
 - a. Class: 09
 - b. Filing Date: October 24, 2017
 - c. Date of 1st Use: March 1, 2018
 - d. Serial No.: 87/657,229
 - e. Registration No.: N/A
 - f. Date of Registration: N/A
- 3. Mark: CESIUM ION
 - a. Class: 42
 - b. Filing Date: October 24, 2017
 - c. Date of 1st Use: March 1, 2018
 - d. Serial No.: 87/657,237



- 4. Mark: 
 - a. Class: 09
 - b. Filing Date: April 29, 2015
 - c. Date of 1st Use: October 1, 2014
 - d. Serial No.: 86/614,300
 - e. Registration No.: 4,873,583
 - f. Date of Registration: December 22, 2015
- 5. Mark: CESIUM PRO
 - a. Class: 09
 - b. Filing Date: April 29, 2015
 - c. Date of 1st Use: October 1, 2014
 - d. Serial No.: 86/614,311
 - e. Registration No.: 4,873,584
 - f. Date of Registration: December 22, 2015
- 6. Mark: Cesium 3D Tiles
 - a. Class: 42
 - b. Filing Date: August 17, 2015
 - c. Date of 1st Use: August 9, 2015
 - d. Serial No.: 86/727,005
 - e. Registration No.: 5,020,566
 - f. Date of Registration: August 16, 2016



- 7. Mark: 
 - a. Class: 42
 - b. Filing Date: August 17, 2015
 - c. Date of 1st Use: August 9, 2015

- d. Serial No.: 86/727,048
- e. Registration No.: 5,020,567
- f. Date of Registration: August 16, 2016

CESIUM INTERNATIONAL TRADEMARKS

1. Mark: CESIUM

- a. Goods/Services: Class 9: Computer software for graphical data representation.
 - b. Our File No.: 2493-055T-MP
 - c. Based on: U.S. Registration No. 4,261,392
 - d. USPTO Ref. No.: A0056253
 - e. Countries: Australia, Benelux, Canada, China, France, Germany, India, Israel, Italy, Japan, Poland, South Korea, Russian Federation, Singapore, Spain, Turkey, United Kingdom
 - f. Int'l Registration No.: 1290175 [Note: this is not registration at country level]
- 2. Australia: Statement of Grant of Protection issued September 2, 2016
 - 3. Benelux: Statement of Grant of Protection issued May 16, 2016
 - 4. Spain: Statement of Grant of Protection issued May 31, 2016
 - 5. United Kingdom: Statement of Grant of Protection issued July 12, 2016
 - 6. Germany: Statement of Grant of Protection issued July 21, 2016
 - 7. Singapore: Statement of Grant of Protection issued July 21, 2016
 - 8. Japan: Statement of Grant of Protection issued August 17, 2016; 2nd Part of Individual Registration Fee paid September 15, 2016
 - 9. France: Notification of Statement of Grant of Protection issued October 27, 2016.
 - 10. Russian Federation: Statement of Grant of Protection issued January 3, 2017.
 - 11. South Korea: Statement of Grant of Protection issued February 2, 2017.
 - 12. Italy: Statement of Grant of Protection issued March 4, 2017.
 - 13. Poland: Statement of Grant of Protection issued March 16, 2017
 - 14. Turkey: Statement of Grant of Protection issued April 18, 2017
 - 15. China: Statement of Grant of Protection issued June 19, 2017
 - 16. India Statement of Grant of Protection issued July 21, 2017.
 - 17. Israel: Statement of Grant of Protection issued October 2, 2017.
 - 18. Canada: Statement of Grant of Protection issued February 27, 2019
- ### **19. Brazil: Mark: CESIUM**
- a. Class 9
 - b. Goods/Services: Computer software for graphical data representation
 - c. Based on: U.S. Registration No. 4,261,392
 - d. Filing Date: February 16, 2016
 - e. Application No.: 910629102
- ### **20. Taiwan: Mark: CESIUM**
- a. Class 9
 - b. Goods/Services: Computer software for graphical data representation
 - c. Based on: U.S. Registration No. 4,261,392
 - d. Filing Date: February 23, 2016
 - e. Application No.: 105009566
 - f. Registration No.: 01797556

g. Date of Registration: January 4, 2017

DOMAIN NAMES

- cesium.com
- cesiumjs.org
- cesiumjs.com
- cesiumlabs.com

OTHER

- I. Documentation, guides, code examples, and issue trackers for software and the Cesium team, e.g., data curation, roadmap, recruiting, mentoring, etc.
- II. Commercial Cesium drone game
- III. Code and content for websites: cesiumjs.org and cesium.com
- IV. Cesium's contributions to open source projects, including COLLADA2GLTF, obj2gltf, gltf-pipeline, 3d-tiles-samples, 3d-tiles-tools, wetzel, webglreport, and cesium-concierge.
 - a. **Notwithstanding the foregoing, this excludes the czml-writer project used by STK Components to generate CZML**
- V. Cesium's contributions to the 3D Tiles specification
- VI. Cesium's contributions to the quantized-mesh specification

PRE-EXISTING INTELLECTUAL PROPERTY

(none as of the Effective Date)