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| <b>PATENT ASSIGNMENT COVER SHEET</b> |
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Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT4306678

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| <b>SUBMISSION TYPE:</b>   | NEW ASSIGNMENT                      |
| <b>NATURE OF CONVEYANCE:</b>  | ASSIGNMENT                          |
| <b>CONVEYING PARTY DATA</b>   |                                     |
| <b>Name</b>   | <b>Execution Date</b>               |
| EHAB SOBHY DERAZ  | 02/28/2017                          |
| THOMAS ALEXANDER MORRISON   | 02/17/2017                          |
| <b>RECEIVING PARTY DATA</b>   |                                     |
| <b>Name:</b>  | MICROSOFT TECHNOLOGY LICENSING, LLC |
| <b>Street Address:</b>  | ONE MICROSOFT WAY                   |
| <b>City:</b>  | REDMOND                             |
| <b>State/Country:</b>   | WASHINGTON                          |
| <b>Postal Code:</b>   | 98052                               |
| <b>PROPERTY NUMBERS Total: 1</b>  |                                     |
| <b>Property Type</b>  | <b>Number</b>                       |
| <b>Application Number:</b>  | 15451952                            |
| <b>CORRESPONDENCE DATA</b>  |                                     |
| <b>Fax Number:</b>  | (720)293-9822                       |
| <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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| <b>ATTORNEY DOCKET NUMBER:</b>  | 401154-US-NP                        |
| <b>NAME OF SUBMITTER:</b>   | DAVID J. BOVITZ                     |
| <b>SIGNATURE:</b>   | /David J. Bovitz/                   |
| <b>DATE SIGNED:</b>   | 03/07/2017                          |
| <b>Total Attachments: 4</b>   |                                     |
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| source=Assignment#page4.tif   |                                     |

I Ehab Sobhy Deraz (“ASSIGNOR”) am the original inventor or an original joint inventor of subject matter (“INVENTION”) disclosed and/or claimed in a patent application entitled “ASYNCHRONOUS DYNAMIC FUNCTIONS FOR CALCULATION ENGINES” (“APPLICATION”), which:

will be filed. ASSIGNOR hereby authorizes, and requests, ASSIGNEE’S legal representative, Microsoft Technology Licensing, LLC., One Microsoft Way, Redmond, Washington 98052 (ASSIGNEE’S LEGAL REPRESENTATIVES), to insert here in parentheses (filed on \_\_\_\_\_ and given Application No. \_\_\_\_\_ by the following Office US – United States Patent and Trademark Office) this APPLICATION’s Application No., filing date, and Office, when known;

was filed on \_\_\_\_\_ and was given Application No \_\_\_\_\_ by the following Office “ \_\_\_\_\_ ”;

Microsoft Technology Licensing, LLC, a Washington limited liability company, on behalf of itself and its successors and assigns (“ASSIGNEE”), is entitled to, and is desirous of acquiring, the entire and exclusive rights, title and interest, including the right of priority, in the INVENTION and the APPLICATION (and all other applications and patents derived therefrom, such as continuing applications, in whole or in part, in and for the United States, its territories, and all foreign countries (“APPLICATION DERIVATIVES”));

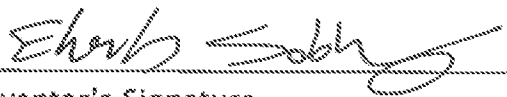
ASSIGNOR hereby authorizes, and requests, ASSIGNEE’S LEGAL REPRESENTATIVES to insert the Application No., filing date, and Office into the following table for any APPLICATION DERIVATIVES after they are known;

| Application No. | Filing Date | Office |
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For good and valuable consideration, the receipt of which is hereby acknowledged by the ASSIGNOR, the ASSIGNOR hereby sells, assigns and transfers to the ASSIGNEE, ASSIGNOR's entire and exclusive rights, title and interest, including the right of priority, in the INVENTION and the APPLICATION (and all other applications and patents derived therefrom, such as continuing applications, in whole or in part, in and for the United States, its territories, and all foreign countries ("APPLICATION DERIVATIVES"));

ASSIGNOR agrees to execute all instruments and documents required for the making and prosecution of the APPLICATION (and APPLICATION DERIVATIVES), for litigation regarding letters patent derived therefrom, and for the purpose of protecting and perfecting title to the APPLICATION (and APPLICATION DERIVATIVES).

|   |                                 |
|---|---------------------------------|
|  | 2/28/17                         |
| Inventor's Signature  | Date                            |
| Ehab Sobhy Deraz  | Printed Name in Native Language |
| Printed Name in English   | (if other than English)         |

I Thomas Alexander Morrison (“ASSIGNOR”) am the original inventor or an original joint inventor of subject matter (“INVENTION”) disclosed and/or claimed in a patent application entitled “ASYNCHRONOUS DYNAMIC FUNCTIONS FOR CALCULATION ENGINES” (“APPLICATION”), which:

will be filed. ASSIGNOR hereby authorizes, and requests, ASSIGNEE’S legal representative, Microsoft Technology Licensing, LLC., One Microsoft Way, Redmond, Washington 98052 (ASSIGNEE’S LEGAL REPRESENTATIVES), to insert here in parentheses (filed on \_\_\_\_\_ and given Application No. \_\_\_\_\_ by the following Office US – United States Patent and Trademark Office) this APPLICATION’s Application No., filing date, and Office, when known;

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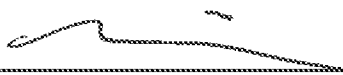
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|   |   |
|---|---|
|  | 02/17/2017  |
| _____<br>Inventor's Signature   | _____<br>Date   |
| Thomas Alexander Morrison<br>_____<br>Printed Name in English                     | _____<br>Printed Name in Native Language<br>(if other than English) |