

## PATENT ASSIGNMENT COVER SHEET

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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> |
|                                                                                                                                                                                                 | CONCURIX CORPORATION                     | 06/12/2015            |
| <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>         |
|                                                                                                                                                                                                 | Application Number:                      | 15036338              |
| <b>CORRESPONDENCE DATA</b>                                                                                                                                                                      |                                          |                       |
| <b>Fax Number:</b>                                                                                                                                                                              | (801)328-1707                            |                       |
| <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> |                                          |                       |
| <b>Email:</b>                                                                                                                                                                                   | reller@wnlaw.com, usdocket@microsoft.com |                       |
| <b>Correspondent Name:</b>                                                                                                                                                                      | RICK D. NYDEGGER                         |                       |
| <b>Address Line 1:</b>                                                                                                                                                                          | 60 EAST SOUTH TEMPLE #1000               |                       |
| <b>Address Line 4:</b>                                                                                                                                                                          | SALT LAKE CITY, UTAH 84111               |                       |
| <b>ATTORNEY DOCKET NUMBER:</b>                                                                                                                                                                  | 13768.2665A.3                            |                       |
| <b>NAME OF SUBMITTER:</b>                                                                                                                                                                       | RICK D. NYDEGGER                         |                       |
| <b>SIGNATURE:</b>                                                                                                                                                                               | /Rick D. Nydegger/                       |                       |
| <b>DATE SIGNED:</b>                                                                                                                                                                             | 05/21/2018                               |                       |
| <b>Total Attachments: 12</b>                                                                                                                                                                    |                                          |                       |
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## Exhibit A

### ASSIGNMENT

For good and valuable consideration, the receipt of which is hereby acknowledged, Concurix Corporation, a Delaware corporation having a primary place of business at 611 Market Street, Kirkland, Suite #6, WA 98033 ("Assignor"), does hereby sell, assign, transfer and convey unto Microsoft Technology Licensing, LLC, having a primary place of business at One Microsoft Way, Redmond, WA 98052 ("Assignee") or its designees, all of Assignor's entire right, title and interest in and to (a) all patents and patent applications listed below; (b) all reissues, reexaminations, continuations, parents, continuations-in-part, divisionals and extensions (collectively "**Related Cases**") of such patents and patent applications; (c) patents or patent applications (i) to which any or all of the foregoing directly or indirectly claims priority, or (ii) for which any or all of the foregoing directly or indirectly forms a basis for priority; and (d) all Related Cases (whether pending, issued, abandoned or filed in the future) and foreign counterparts to any or all of the foregoing, including without limitation utility models design patents, certificates of invention and equivalent rights worldwide (collectively "**Patent Rights**");

| PublicationNum | PatentNum | ApplicationNum | FilingDate | Title                                                | Type                     | Status   |
|----------------|-----------|----------------|------------|------------------------------------------------------|--------------------------|----------|
| 20120227040    | 8,615,766 | 13/461,733     | 5/1/12     | Hybrid Operating System                              | Utility: Non-Provisional | Issued   |
| WO 2013/185447 |           | PCT/US12/41015 | 6/6/12     | Hybrid Operating System                              | Utility: PCT             |          |
| 20120233592    | 8,650,538 | 13/461,740     | 5/1/12     | Meta Garbage Collection for Functional Code          | Utility: Non-Provisional | Issued   |
| WO 2013/185448 |           | PCT/US12/41036 | 6/6/12     | Meta Garbage Collection for Functional Code          | Utility: PCT             |          |
| 20140040591    | 8,995,070 | 14/049,016     | 10/8/13    | Garbage Collection Based on Functional Block Size    | Utility: Non-Provisional | Issued   |
| 20130117753    |           | 13/461,748     | 5/1/12     | Many-core Process Scheduling to Maximize Cache Usage | Utility: Non-Provisional | Final OA |
| WO 2013/185451 |           | PCT/US12/45964 | 7/9/12     | Many-core Process Scheduling to Maximize Cache Usage | Utility: PCT             |          |
| 20130117759    | 8,595,743 | 13/461,752     | 5/1/12     | Network Aware Process Scheduling                     | Utility: Non-Provisional | Issued   |
| WO 2013/185458 |           | PCT/US12/56701 | 9/21/12    | Network Aware Process Scheduling                     | Utility: PCT             |          |
| 20140026142    |           | 14/033,220     | 9/20/13    | Process Scheduling to Maximize Input Throughput      | Utility: Non-Provisional |          |
| 20120222019    | 8,495,598 | 13/461,755     | 5/1/12     | Control Flow Graph Operating System Configuration    | Utility: Non-Provisional | Issued   |
| WO 2013/185459 |           | PCT/US12/56704 | 9/21/12    | Control Flow Graph Operating System Configuration    | Utility: PCT             |          |
| 20130258112    |           | 13/921,625     | 6/19/13    | Control Flow Graph Application Configuration         | Utility: Non-Provisional | NOA      |
| 20120324454    |           | 13/463,844     | 5/4/12     | Control Flow Graph Driven Operating                  | Utility: Non-Provisional | Final OA |

| PublicationNum     | PatentNum | ApplicationNum | FilingDate | Title                                                                                      | Type                     | Status   |
|--------------------|-----------|----------------|------------|--------------------------------------------------------------------------------------------|--------------------------|----------|
|                    |           |                |            | System                                                                                     |                          |          |
| WO 2013/165460     |           | PCT/US12/56707 | 9/21/12    | Control Flow Graph Driven Operating System                                                 | Utility: PCT             |          |
| 20120233601        | 8,716,255 | 13/461,757     | 5/1/12     | Recompiling with Generic to Specific Replacement                                           | Utility: Non-Provisional | issued   |
| WO 2013/165461     |           | PCT/US12/56711 | 9/21/12    | Recompiling with Generic to Specific Replacement                                           | Utility: PCT             |          |
| 20120317371        | 9,047,196 | 13/526,728     | 6/19/12    | Usage Aware NUMA Process Scheduling                                                        | Utility: Non-Provisional | issued   |
| WO 2013/191720     |           | PCT/US12/66040 | 11/1/12    | Usage Aware NUMA Process Scheduling                                                        | Utility: PCT             |          |
| 20120317389        | 8,700,838 | 13/526,925     | 6/19/12    | Allocating Heaps in NUMA Systems                                                           | Utility: Non-Provisional | issued   |
| WO 2013/191721     |           | PCT/US12/66076 | 11/20/12   | Allocating Heaps in NUMA Systems                                                           | Utility: PCT             |          |
| 20120317587        | 8,707,326 | 13/551,318     | 7/17/12    | Pattern Matching Process Scheduler in Message Passing Environment                          | Utility: Non-Provisional | issued   |
| WO 2014/014486     |           | PCT/US12/66091 | 11/20/12   | PATTERN MATCHING PROCESS SCHEDULER IN MESSAGE PASSING ENVIRONMENT                          | Utility: PCT             |          |
| 20120317557        | 8,793,669 | 13/551,529     | 7/17/12    | Pattern Extraction from Executable Code in Message Passing Environments                    | Utility: Non-Provisional | issued   |
| WO 2014/014487     |           | PCT/US12/66098 | 11/20/12   | PATTERN EXTRACTION FROM EXECUTABLE CODE IN MESSAGE PASSING ENVIRONMENTS                    | Utility: PCT             |          |
| US 2014/0298304 A1 | 8,966,460 | 14/248,258     | 4/8/14     | Transmission Point Pattern Extraction from Executable Code in Message Passing Environments | Utility: Divisional      | issued   |
| 20120317577        |           | 13/551,533     | 7/17/12    | Pattern Matching Process Scheduler with Upstream Optimization                              | Utility: Non-Provisional | final GA |
| WO 2014/014532     |           | PCT/US13/37310 | 4/19/13    | PATTERN MATCHING PROCESS SCHEDULER WITH UPSTREAM OPTIMIZATION                              | Utility: PCT             |          |
| 20130080760        |           | 13/571,540     | 8/10/12    | Execution Environment with Feedback Loop                                                   | Utility: Non-Provisional | final GA |
| WO 2014/025417     |           | PCT/US13/36968 | 4/17/13    | EXECUTION ENVIRONMENT WITH FEEDBACK LOOP                                                   | Utility: PCT             |          |
| 20130080761        | 9,043,788 | 13/571,569     | 8/10/12    | Experiment Manager for Manycore Systems                                                    | Utility: Non-Provisional | issued   |

| PublicationNum | PatentNum | ApplicationNum | FilingDate | Title                                                                 | Type                         | Status                       |
|----------------|-----------|----------------|------------|-----------------------------------------------------------------------|------------------------------|------------------------------|
| WO 2014/025419 |           | PCT/US13/37341 | 4/19/13    | EXPERIMENT<br>MANAGER FOR<br>MANYCORE<br>SYSTEMS                      | Utility: PCT                 |                              |
| 20130081005    | 8,966,463 | 13/571,599     | 8/30/12    | Memory<br>Management<br>Parameters Derived<br>from System<br>Modeling | Utility: Non-<br>Provisional | Issued                       |
| WO 2014/025421 |           | PCT/US13/37523 | 4/22/13    | MEMORY<br>MANAGEMENT<br>PARAMETERS<br>DERIVED FROM<br>SYSTEM MODELING | Utility: PCT                 |                              |
| 20130074058    | 8,789,030 | 13/622,342     | 9/18/12    | Memorization from<br>Offline Analysis                                 | Utility: Non-<br>Provisional | Issued                       |
| WO 2014/046740 |           | PCT/US13/39386 | 5/3/13     | MEMOIZATION<br>FROM OFFLINE<br>ANALYSIS                               | Utility: PCT                 |                              |
| 20130074049    | 8,752,034 | 13/671,813     | 11/8/12    | Memorization<br>Configuration File<br>Consumed at<br>Runtime          | Utility: Non-<br>Provisional | Issued                       |
| WO 2014/074158 |           | PCT/US13/40183 | 5/8/13     | MEMOIZATION<br>CONFIGURATION<br>FILE CONSUMED AT<br>RUNTIME           | Utility: PCT                 |                              |
| 20130074055    | 8,656,378 | 13/671,816     | 11/8/12    | Memorization<br>Configuration File<br>Consumed at<br>Compile Time     | Utility: Non-<br>Provisional | Issued                       |
| WO 2014/074159 |           | PCT/US13/40224 | 5/8/13     | MEMOIZATION<br>CONFIGURATION<br>FILE CONSUMED AT<br>COMPILE TIME      | Utility: PCT                 |                              |
| 20130067445    | 8,639,204 | 13/671,819     | 11/8/12    | Determination of<br>Function Purity for<br>Memorization               | Utility: Non-<br>Provisional | Issued                       |
| WO 2014/074161 |           | PCT/US13/40817 | 5/13/13    | DETERMINATION OF<br>FUNCTION PURITY<br>FOR MEMOIZATION                | Utility: PCT                 |                              |
| 20130073897    | 8,752,031 | 13/671,822     | 11/8/12    | Input Vector<br>Analysis for<br>Memorization<br>Estimation            | Utility: Non-<br>Provisional | Issued                       |
| WO 2014/074163 |           | PCT/US13/41030 | 5/14/13    | INPUT VECTOR<br>ANALYSIS FOR<br>MEMOIZATION<br>ESTIMATION             | Utility: PCT                 |                              |
| 20130074056    | 8,626,254 | 13/671,825     | 11/8/12    | Memorizing with<br>Read Only Side<br>Effects                          | Utility: Non-<br>Provisional | Issued                       |
| WO 2014/074164 |           | PCT/US13/41128 | 5/15/13    | MEMORIZING WITH<br>READ ONLY SIDE<br>EFFECTS                          | Utility: PCT                 |                              |
| 20130074057    |           | 13/671,838     | 11/8/12    | Selecting Functions<br>for Memorization<br>Analysis                   | Utility: Non-<br>Provisional | Notice of<br>Appeal<br>Filed |
| WO 2014/074166 |           | PCT/US13/41138 | 5/15/13    | SELECTING<br>FUNCTIONS FOR<br>MEMOIZATION<br>ANALYSIS                 | Utility: PCT                 |                              |
| 20130073523    |           | 13/671,891     | 11/8/12    | Purity Analysis Using                                                 | Utility: Non-                | Final OA                     |

| Publication Number | Patent Number | Application Number | Filing Date | Title                                                          | Type                     | Status                   |
|--------------------|---------------|--------------------|-------------|----------------------------------------------------------------|--------------------------|--------------------------|
|                    |               |                    |             | White List/Black List Analysis                                 | Provisional              |                          |
| WO 2014/074167     |               | PCT/US13/41151     | 5/15/13     | PURITY ANALYSIS USING WHITE LIST/BLACK LIST ANALYSIS           | Utility: PCT             |                          |
| 20130073829        | 8,607,018     | 13/671,834         | 11/8/12     | Memory Usage Configuration Based on Observations               | Utility: Non-Provisional | issued                   |
| WO 2014/074168     |               | PCT/US13/41165     | 5/15/13     | MEMORY USAGE CONFIGURATION BASED ON OBSERVATIONS               | Utility: PCT             |                          |
| 20130074093        | 8,656,134     | 13/671,836         | 11/8/12     | Optimized Memory Configuration Deployed on Executing Code      | Utility: Non-Provisional | issued                   |
| WO 2014/074169     |               | PCT/US13/41178     | 5/15/13     | OPTIMIZED MEMORY CONFIGURATION DEPLOYED ON EXECUTING CODE      | Utility: PCT             |                          |
| 20130074093        | 8,656,135     | 13/671,841         | 11/8/12     | Optimized Memory Configuration Deployed Prior to Execution     | Utility: Non-Provisional | issued                   |
| WO 2014/074170     |               | PCT/US13/41184     | 5/15/13     | OPTIMIZED MEMORY CONFIGURATION DEPLOYED PRIOR TO EXECUTION     | Utility: PCT             |                          |
| 20130073604        | 8,694,574     | 13/671,847         | 11/8/12     | Optimized Settings in a Configuration Database with Boundaries | Utility: Non-Provisional | issued                   |
| WO 2014/074162     |               | PCT/US13/41009     | 5/14/13     | OPTIMIZED SETTINGS IN A CONFIGURATION DATABASE WITH BOUNDARIES | Utility: PCT             |                          |
| 20140019756        | 9,021,262     | 13/751,000         | 1/25/13     | Obfuscating Trace Data                                         | Utility: Non-Provisional | issued                   |
| WO 2014/116290     |               | PCT/US13/42030     | 5/21/13     | OBFUSCATING TRACE DATA                                         | Utility: PCT             |                          |
| 20140019985        |               | 13/751,006         | 1/25/13     | Parallel Tracing for Performance and Detail                    | Utility: Non-Provisional | non-final OA             |
| WO 2014/116291     |               | PCT/US13/42081     | 5/21/13     | PARALLEL TRACING FOR PERFORMANCE DETAIL                        | Utility: PCT             |                          |
| 20140019598        | 8,954,546     | 13/751,012         | 1/25/13     | Tracing with a Workload Distributor                            | Utility: Non-Provisional | issued                   |
| WO 2014/116294     |               | PCT/US13/42788     | 5/27/13     | TRACING WITH A WORKLOAD DISTRIBUTOR                            | Utility: PCT             |                          |
| 20140025572        |               | 13/751,026         | 1/25/13     | Tracing as a Service                                           | Utility: Non-Provisional | abandoned                |
| WO 2014/116295     |               | PCT/US13/42789     | 5/27/13     | TRACING AS A SERVICE                                           | Utility: PCT             |                          |
| 20140019879        |               | 13/757,570         | 2/1/13      | Dynamic Visualization of Message Passing                       | Utility: Non-Provisional | Response to non-final OA |

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|----------------|-----------|----------------|------------|----------------------------------------------------------------------------------------|------------------------------|----------|
|                |           | PCT/US13/43492 | 5/31/13    | COMPUTATION<br>DYNAMIC<br>VISUALIZATION OF<br>MESSAGE PASSING<br>COMPUTATION           | Utility: PCT                 | entered  |
| 20130232174    |           | 13/757,582     | 2/1/13     | Highlighting of Time<br>Series Data on Force<br>Directed Graph                         | Utility: Non-<br>Provisional |          |
|                |           | PCT/US13/43522 | 5/31/13    | HIGHLIGHTING OF<br>TIME AND SERIES<br>DATA ON FORCE<br>DIRECTED GRAPH                  | Utility: PCT                 |          |
| 20130232492    |           | 13/757,598     | 2/1/13     | Force Directed<br>Graph with Time<br>Series Data                                       | Utility: Non-<br>Provisional |          |
|                |           | PCT/US13/43811 | 6/2/13     | FORCE DIRECTED<br>GRAPH WITH TIME<br>SERIES DATA                                       | Utility: PCT                 |          |
| 20130232493    |           | 13/757,625     | 2/1/13     | Controlling<br>Application Tracing<br>using Dynamic<br>Visualization                   | Utility: Non-<br>Provisional | final OA |
|                |           | PCT/US13/44193 | 6/5/13     | CONTROLLING<br>APPLICATION<br>TRACING USING<br>DYNAMIC<br>VISUALIZATION                | Utility: PCT                 |          |
| 20130229416    |           | 13/757,631     | 2/1/13     | Transformation<br>Function Insertion<br>for Dynamically<br>Displayed Tracer<br>Data    | Utility: Non-<br>Provisional |          |
|                |           | PCT/US13/46050 | 6/16/13    | TRANSFORMATION<br>FUNCTION<br>INSERTION FOR<br>DYNAMICALLY<br>DISPLAYED TRACER<br>DATA | Utility: PCT                 |          |
| 20130283240    | 9,021,447 | 13/765,642     | 2/12/13    | Application Tracing<br>by Distributed<br>Objectives                                    | Utility: Non-<br>Provisional | issued   |
| WO 2014/126601 |           | PCT/US13/46664 | 6/19/13    | Application Tracing<br>by Distributed<br>Objectives                                    | Utility: PCT                 |          |
| 20130283246    | 8,843,901 | 13/765,646     | 2/12/13    | Cost Analysis for<br>Selecting Trace<br>Objectives                                     | Utility: Non-<br>Provisional | issued   |
| WO 2014/126602 |           | PCT/US13/46918 | 6/20/13    | COST ANALYSIS FOR<br>SELECTING TRACE<br>OBJECTIVES                                     | Utility: PCT                 |          |
| 20130283281    |           | 13/765,651     | 2/12/13    | Deploying Trace<br>Objectives using<br>Cost Analyses                                   | Utility: Non-<br>Provisional | final OA |
| WO 2014/126603 |           | PCT/US13/46922 | 6/20/13    | DEPLOYING TRACE<br>OBJECTIVES USING<br>COST ANALYSES                                   | Utility: PCT                 |          |
| 20130283241    | 8,997,063 | 13/765,654     | 2/12/13    | Periodicity<br>Optimization in an<br>Automated Tracing<br>System                       | Utility: Non-<br>Provisional | issued   |
| WO 2014/126604 |           | PCT/US13/46925 | 6/21/13    | PERIODICITY<br>OPTIMIZATION IN<br>AN AUTOMATED                                         | Utility: PCT                 |          |

| PublicationNum | PatentNum | ApplicationNum | FilingDate | Title                                                         | Type                     | Status                               |
|----------------|-----------|----------------|------------|---------------------------------------------------------------|--------------------------|--------------------------------------|
|                |           |                |            | TRACING SYSTEM                                                |                          |                                      |
| 20130283247    | 8,924,941 | 13/765,657     | 2/12/13    | Optimization Analysis Using Similar Frequencies               | Utility: Non-Provisional | issued                               |
| WO 2014/126605 |           | PCT/US13/47211 | 6/23/13    | OPTIMIZATION ANALYSIS USING SIMILAR FREQUENCIES               | Utility: PCT             |                                      |
| 20130283102    |           | 13/765,663     | 2/12/13    | Deployment of Profile Models with a Monitoring Agent          | Utility: Non-Provisional | abandoned / petition to revive filed |
| WO 2014/126639 |           | PCT/US13/73804 | 12/9/13    | Deployment of Profile Models with a Monitoring Agent          | Utility: PCT             |                                      |
| 20130227536    |           | 13/853,769     | 3/29/13    | Increasing Performance at Runtime from Trace Data             | Utility: Non-Provisional | Response to non-final OA entered     |
| WO 2014/143247 |           | PCT/US13/73935 | 12/9/13    | INCREASING PERFORMANCE AT RUNTIME FROM TRACE DATA             | Utility: PCT             |                                      |
| 20130227529    |           | 13/853,791     | 3/29/13    | Runtime Memory Settings Derived from Trace Data               | Utility: Non-Provisional | final OA                             |
| 20130219057    |           | 13/853,816     | 3/29/13    | Relationships Derived from Trace Data                         | Utility: Non-Provisional | Response to non-final OA entered     |
| 20130282545    |           | 13/867,058     | 4/25/13    | Marketplace for Monitoring Services                           | Utility: Non-Provisional | Response to non-final OA entered     |
| WO 2014/171979 |           | PCT/US13/74361 | 12/11/13   | Marketplace for Monitoring Services                           | Utility: PCT             |                                      |
| 20140013308    |           | 13/867,062     | 4/20/13    | Application Development Environment with Services Marketplace | Utility: Non-Provisional | final OA                             |
| 20140915926    |           | 13/867,063     | 4/20/13    | Automated Market Maker in Monitoring Services Marketplace     | Utility: Non-Provisional |                                      |
| 20140282597    |           | 13/866,014     | 4/18/13    | Bottleneck Detector for Executing Applications                | Utility: Non-Provisional | final OA                             |
| WO/2014/143279 |           | PCT/US13/75876 | 12/17/13   | BOTTLENECK DETECTOR FOR EXECUTING APPLICATIONS                | Utility: PCT             |                                      |
| 20140281726    |           | 13/866,020     | 4/18/13    | Bottleneck Detector Application Programming Interface         | Utility: Non-Provisional | final OA                             |
| 20140013311    |           | 13/866,022     | 4/18/13    | Iterative Bottleneck Detector for Executing Applications      | Utility: Non-Provisional | non-final OA                         |
| 20130283242    |           | 13/867,057     | 4/30/13    | Tracing Closures in a Callback Environment                    | Utility: Non-Provisional | final OA                             |



| PublicationNum     | PatentNum | ApplicationNum | FilingDate | Title                                                                          | Type                     | Status       |
|--------------------|-----------|----------------|------------|--------------------------------------------------------------------------------|--------------------------|--------------|
| WO/2014/171982     |           | PCT/US14/11727 | 1/15/14    | TRACER LIST FOR AUTOMATICALLY CONTROLLING TRACER BEHAVIOR                      | Utility: PCT             |              |
| 20140013309        | 8,990,777 | 13/899,500     | 5/21/13    | Interactive Graph for Navigating Application Code                              | Utility: Non-Provisional | issued       |
| WO2014189553       |           | PCT/US14/11733 | 1/15/14    | GRAPH FOR NAVIGATING APPLICATION CODE                                          | Utility: PCT             |              |
| US 2014/0189650 A1 |           | 13/899,503     | 5/21/13    | Setting Breakpoints Using an Interactive Graph Representing an Application     | Utility: Non-Provisional | final OA     |
| US 2014/0189651 A1 |           | 13/899,504     | 5/21/13    | Animated Highlights in a Graph Representing an Application                     | Utility: Non-Provisional | final OA     |
| US 2014/0189652 A1 |           | 13/899,507     | 5/21/13    | Filtering and Transforming a Graph Representing an Application                 | Utility: Non-Provisional | final OA     |
| 20140317454        | 9,031,445 | 13/916,561     | 6/12/13    | Tracer List for Automatically Controlling Tracer Behavior                      | Utility: Non-Provisional | issued       |
| 20140317603        |           | 13/916,563     | 6/12/13    | Multiple Tracer Configurations Applied on a Function-by-Function Level         | Utility: Non-Provisional | non-final OA |
| 20140317604        |           | 13/916,566     | 6/12/13    | Real Time Analysis of Tracer Summaries to Change Tracer Behavior               | Utility: Non-Provisional | non-final OA |
| 20140317605        | 8,966,452 | 13/916,568     | 6/12/13    | User Interaction Analysis of Tracer Data for Configuring an Application Tracer | Utility: Non-Provisional | issued       |
| 20140317606        | 8,978,016 | 13/916,571     | 6/12/13    | Error List and Bug Report Analysis for Configuring an Application Tracer       | Utility: Non-Provisional | issued       |
| US 2015-0029193 A1 |           | 13/949,978     | 7/24/13    | Event Chain Visualization of Performance Data                                  | Utility: Non-Provisional |              |
| WO 2015/012885     |           | PCT/US14/11798 | 1/16/14    | EVENT VISUALIZATION OF PERFORMANCE DATA                                        | Utility: PCT             |              |
| US 2015-0033172 A1 |           | 13/949,994     | 7/24/13    | Timeline Charts with Subgraphs                                                 | Utility: Non-Provisional |              |
| US 2015-0052403 A1 |           | 13/970,302     | 8/19/13    | Snapshotting Executing Code with a Modifiable Snapshot Definition              | Utility: Non-Provisional | final OA     |
| WO 2015/036391     |           | PCT/US14/11932 | 1/16/14    | SNAPSHOTTING EXECUTING CODE WITH A MODIFIABLE SNAPSHOT DEFINITION              | Utility: PCT             |              |
| US 2015-0052406 A1 | 9,021,444 | 13/970,319     | 8/19/13    | Combined                                                                       | Utility: Non-            | issued       |

| Publication Num    | Patent Num | Application Num   | Filing Date | Title                                                                          | Type                     | Status   |
|--------------------|------------|-------------------|-------------|--------------------------------------------------------------------------------|--------------------------|----------|
|                    |            |                   |             | Performance Tracer and Snapshot Debugging System                               | Provisional              |          |
| US 2015-0052400 A1 |            | 13/970,343        | 8/19/13     | Breakpoint Setting Through a Debugger User Interface                           | Utility: Non-Provisional | final OA |
|                    |            | 61/873,773        | 9/4/13      | Module Specific Tracing in a Shared Module Environment                         | Utility: Provisional     | expired  |
| WO 2015/0332391    |            | PCT/182014/060233 | 3/27/14     | Module Specific Tracing in a Shared Module Environment                         | Utility: PCT             |          |
| US 2015-0067652 A1 |            | 14/455,156        | 8/8/14      | Module Specific Tracing in a Shared Module Environment                         | Utility: Non-Provisional | NDA      |
|                    |            | 61/874,927        | 9/6/13      | Tracing System for Application and Module Tracing                              | Utility: Provisional     | expired  |
| US 2015-0067654 A1 |            | 14/455,176        | 8/8/14      | Tracing System for Application and Module Tracing                              | Utility: Non-Provisional |          |
|                    |            | 61/874,931        | 9/6/13      | Module Database with Tracing Options                                           | Utility: Provisional     | expired  |
| US 2015-0066869 A1 |            | 14/455,202        | 8/8/14      | Module Database with Tracing Options                                           | Utility: Non-Provisional |          |
|                    |            | 61/903,727        | 11/13/13    | Determination of Production vs Development Uses from Tracer Data               | Utility: Provisional     | expired  |
|                    |            | PCT/182014/060238 | 3/27/14     | Determination of Production vs Development Uses from Tracer Data               | Utility: PCT             |          |
|                    |            | 61/903,733        | 11/13/13    | Analysis of Production Use Tracer Data to Determine Production-Related Metrics | Utility: Provisional     | expired  |
|                    |            | 61/903,744        | 11/13/13    | Module Search and Browse System with Production-Related Metrics                | Utility: Provisional     | expired  |
|                    |            | 61/903,755        | 11/13/13    | Software Component Recommendation Based on Multiple Trace Runs                 | Utility: Provisional     | expired  |
| WO 2015/071777     |            | PCT/182014/060239 | 3/27/14     | Software Component Recommendation Based on Multiple Trace Runs                 | Utility: PCT             |          |
|                    |            | 61/903,762        | 11/13/13    | Relationship Graph for Software Component Recommendations                      | Utility: Provisional     | expired  |
|                    |            | 61/903,768        | 11/13/13    | Component Usage Recommendation                                                 | Utility: Provisional     | expired  |

| PublicationNum | PatentNum | ApplicationNum    | FilingDate | Title                                                                                | Type                     | Status       |
|----------------|-----------|-------------------|------------|--------------------------------------------------------------------------------------|--------------------------|--------------|
|                |           |                   |            | System with Relationship and Performance Matching                                    |                          |              |
|                |           | 61/903,775        | 11/13/13   | Application Execution Path Tracing with Configurable Origin Definition               | Utility: Provisional     | expired      |
|                |           | PCT/182014/060240 | 3/27/14    | Application Execution Path Tracing with Configurable Origin Definition               | Utility: PCT             |              |
|                |           | 61/903,781        | 11/13/13   | User Interface for Selecting Tracing Origins for Aggregating Classes of Trace Data   | Utility: Provisional     | expired      |
|                |           | 61/903,786        | 11/13/13   | Tracing Origin Rules for Minimizing Trace Data Collection by Sampling                | Utility: Provisional     | expired      |
|                |           | 61/930,923        | 1/23/14    | Computer Performance Prediction Using Search Technologies                            | Utility: Provisional     | expired      |
|                |           | PCT/182014/060241 | 3/28/14    | Computer Performance Prediction Using Search Technologies                            | Utility: PCT             |              |
|                |           | 61/930,926        | 1/23/14    | Event Prediction Using Historical Time Series Observations of a Computer Application | Utility: Provisional     | expired      |
|                |           | 61/930,928        | 3/23/14    | Visualization of Behavior Clustering of Computer Applications                        | Utility: Provisional     | expired      |
|                |           | 61/930,929        | 1/23/14    | Behavior Clustering Analysis and Alerting System for Computer Applications           | Utility: Provisional     | expired      |
|                |           | 14/198,223        | 3/5/14     | N-Gram Analysis of Software Behavior in Production and Testing Environments          | Utility: Non-Provisional |              |
|                |           | PCT/1814/062278   | 6/18/14    | N-Gram Analysis of Software Behavior in Production and Testing Environments          | Utility: PCT             |              |
|                |           | 14/198,239        | 3/5/14     | N-Gram Analysis of Inputs to a Software Application                                  | Utility: Non-Provisional |              |
|                |           | 14/198,234        | 3/5/14     | Security Alerting Using N-Gram Analysis of Program Execution Data                    | Utility: Non-Provisional | non-final OA |
|                |           | 14/198,271        | 3/5/14     | Automated                                                                            | Utility: Non-            |              |

| PublicationNum     | PatentNum | ApplicationNum | FilingDate | Title                                                                                      | Type                     | Status                                |
|--------------------|-----------|----------------|------------|--------------------------------------------------------------------------------------------|--------------------------|---------------------------------------|
|                    |           |                |            | Regression Testing for Software Applications                                               | Provisional              |                                       |
|                    |           | 14/198,284     | 3/5/14     | Regression Evaluation using Behavior Models of Software Applications                       | Utility: Non-Provisional | non-final OA                          |
|                    |           | 14/198,296     | 3/5/14     | Origin Trace Behavior Model for Application Behavior                                       | Utility: Non-Provisional |                                       |
| US 2015-0082285 A1 |           | 14/549,430     | 11/20/14   | RUNTIME SETTINGS DERIVED FROM RELATIONSHIPS IDENTIFIED IN TRACER DATA                      | Continuation             |                                       |
|                    |           | 12875730.9     | 6/6/12     | Hybrid Operating System                                                                    | EPO                      | Published in European Patent Bulletin |
|                    |           | 14/582,973     | 12/24/14   | Optimization Analysis Using Similar Frequencies                                            | Continuation             |                                       |
|                    |           | 14/617,509     | 2/9/15     | TRACING WITH A WORKLOAD DISTRIBUTOR                                                        | Continuation             |                                       |
|                    |           | 14/596,126     | 1/13/15    | COMPUTER PERFORMANCE PREDICTION USING SEARCH TECHNOLOGIES                                  | Utility: Non-Provisional |                                       |
|                    |           | 14/596,144     | 1/13/15    | EVENT PREDICTION USING HISTORICAL TIME SERIES OBSERVATIONS OF A COMPUTER APPLICATION       | Utility: Non-Provisional |                                       |
|                    |           | 14/596,151     | 1/13/15    | VISUALIZATION OF BEHAVIOR CLUSTERING OF COMPUTER APPLICATIONS                              | Utility: Non-Provisional |                                       |
|                    |           | 14/596,159     | 1/13/15    | BEHAVIOR CLUSTERING ANALYSIS AND ALERTING SYSTEM FOR COMPUTER APPLICATIONS                 | Utility: Non-Provisional |                                       |
|                    |           | 14/629,396     | 2/23/15    | Memory Management Parameters Derived from System Modeling                                  | Continuation in Part     |                                       |
|                    |           | 14/629,113     | 2/23/15    | TRANSMISSION POINT PATTERN EXTRACTION FROM EXECUTABLE CODE IN MESSAGE PASSING ENVIRONMENTS | Continuation             |                                       |
|                    |           | 14/629,322     | 2/23/15    | USER INTERACTION ANALYSIS OF TRACER DATA FOR                                               | Continuation             |                                       |

| PublicationNum  | ParentNum | ApplicationNum | FilingDate | Title                                                                    | Type                     | Status    |
|-----------------|-----------|----------------|------------|--------------------------------------------------------------------------|--------------------------|-----------|
|                 |           |                |            | CONFIGURING AN APPLICATION TRACER                                        |                          |           |
|                 |           | 14/642,192     | 3/10/15    | ERROR LIST AND BUG REPORT ANALYSIS FOR CONFIGURING AN APPLICATION TRACER | Continuation             |           |
|                 |           | 14/671,449     | 3/27/15    | PERIODICITY OPTIMIZATION IN AN AUTOMATED TRACING SYSTEM                  | Continuation             |           |
|                 |           | 14/666,120     | 3/23/15    | INTERACTIVE GRAPH FOR NAVIGATING APPLICATION CODE                        | Continuation             |           |
| US20120222043A1 |           | 13/461,745     | 5/1/2012   | Process Scheduling Using Scheduling Graph to Minimize Managed Elements   | Utility: Non-Provisional | abandoned |
| US20120317421A1 |           | 13/526,723     | 6/19/2012  | Fingerprinting Executable Code                                           | Utility: Non-Provisional | abandoned |
| WO2013191719A1  |           | PCT/US12/63033 | 11/1/2012  | FINGERPRINTING EXECUTABLE CODE                                           | Utility: PCT             | expired   |
| US20130085882A1 |           | 13/632,338     | 9/18/2012  | Offline Optimization of Computer Software                                | Utility: Non-Provisional | abandoned |
| WO2014046739A1  |           | PCT/US13/39379 | 5/3/2013   | OFFLINE OPTIMIZATION OF COMPUTER SOFTWARE                                | Utility: PCT             | expired   |
| US20130219372A1 |           | 13/853,809     | 3/29/2013  | Runtime Settings Derived from Relationships Identified in Tracer Data    | Utility: Non-Provisional | abandoned |
|                 |           | 61/801,298     | 3/15/2013  | Increasing Performance at Runtime from Trace Data                        | Utility: Provisional     | expired   |
| US20140013306A1 |           | 13/867,061     | 4/20/2013  | Computer Load Generator Marketplace                                      | Utility: Non-Provisional | abandoned |
| WO2013165450A1  |           | PCT/US12/43811 | 6/22/2012  | PROCESS SCHEDULING USING SCHEDULING GRAPH TO MINIMIZE MANAGED ELEMENTS   | Utility: PCT             | expired   |

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on 6/12/2015

ASSIGNOR

By: [Signature]  
Name: Alexander Gourev  
Title: CEO

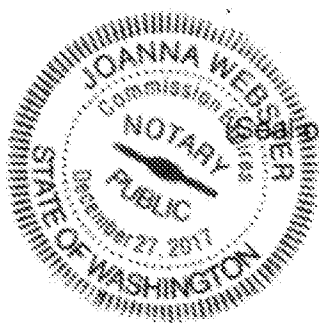
(Signature MUST be notarized)

State of Washington

County of King

I certify that I know or have satisfactory evidence that (name of person) is the person who appeared before me, and said person acknowledged that (he/she) signed this instrument and acknowledged it to be (his/her) free and voluntary act for the uses and purposes mentioned in the instrument.

Dated: 6/12/15 Top of Form



(Seal or stamp)

[Signature]  
(Signature)

Notary Public  
Title

My appointment  
expires 12/27/17