

## WebXPRT 3 release notes

Thank you for using WebXPRT 3. If you have any questions or concerns, please contact us at [BenchmarkXPRTSupport@principledtechnologies.com](mailto:BenchmarkXPRTSupport@principledtechnologies.com)

### Running WebXPRT

To run WebXPRT, navigate to

[http://www.pricedtechnologies.com/benchmarkxprt/webxpert/2018/3\\_v5](http://www.pricedtechnologies.com/benchmarkxprt/webxpert/2018/3_v5).

The WebXPRT 3 UI is simple. Here is the start page.

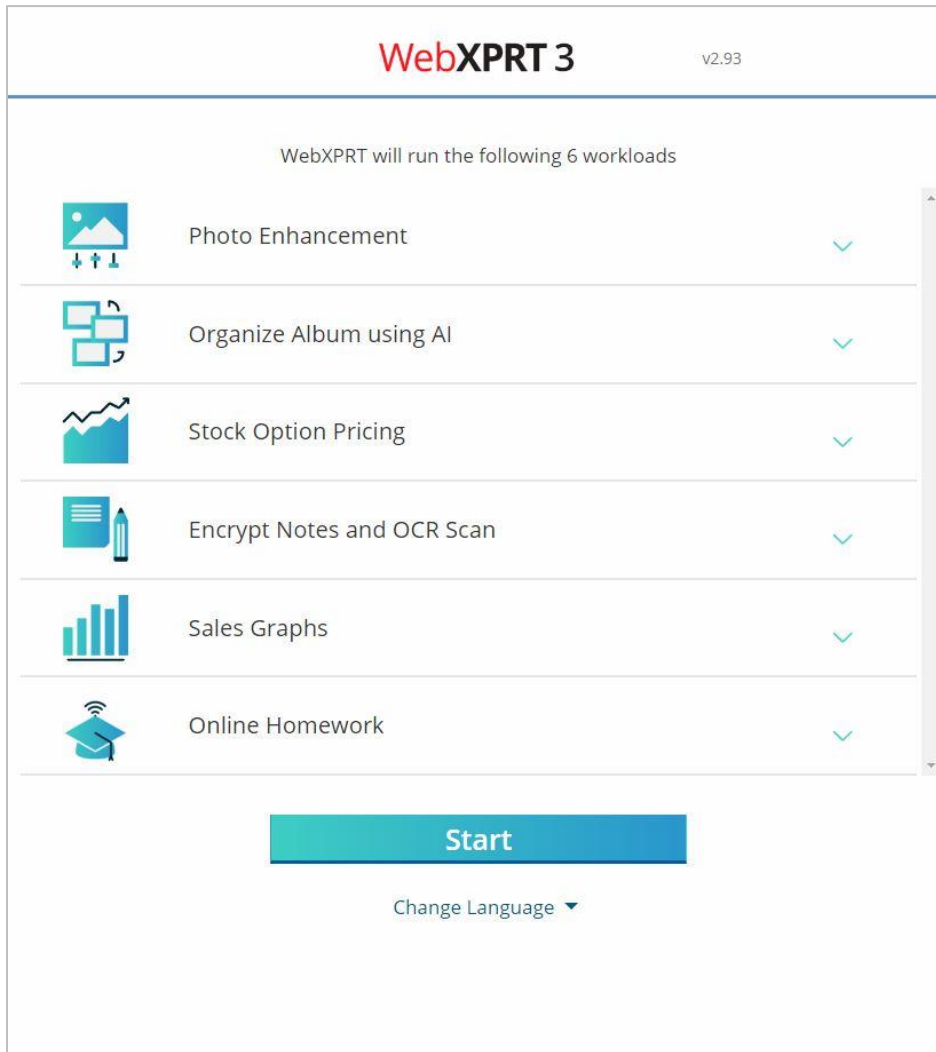


Figure 1: The WebXPRT 3 start page.

By default, all tests are selected. You may deselect any test by clicking the drop-down arrow to the right of the test name and unchecking the box next to the workload description. However, you will not get an overall score unless you run all six tests.

Start the test by clicking the blue start button below the test list. Below the start button, click the Change Language drop-down menu to change the interface language to German or Simplified Chinese. Small form factor devices may require you to scroll down to see all the controls.

Once you click Start, the test will begin. As the tests start running, you will see a description of each test, a progress indication bar immediately below the header, and the test completion percentage indicator in the upper right-hand corner of the screen.

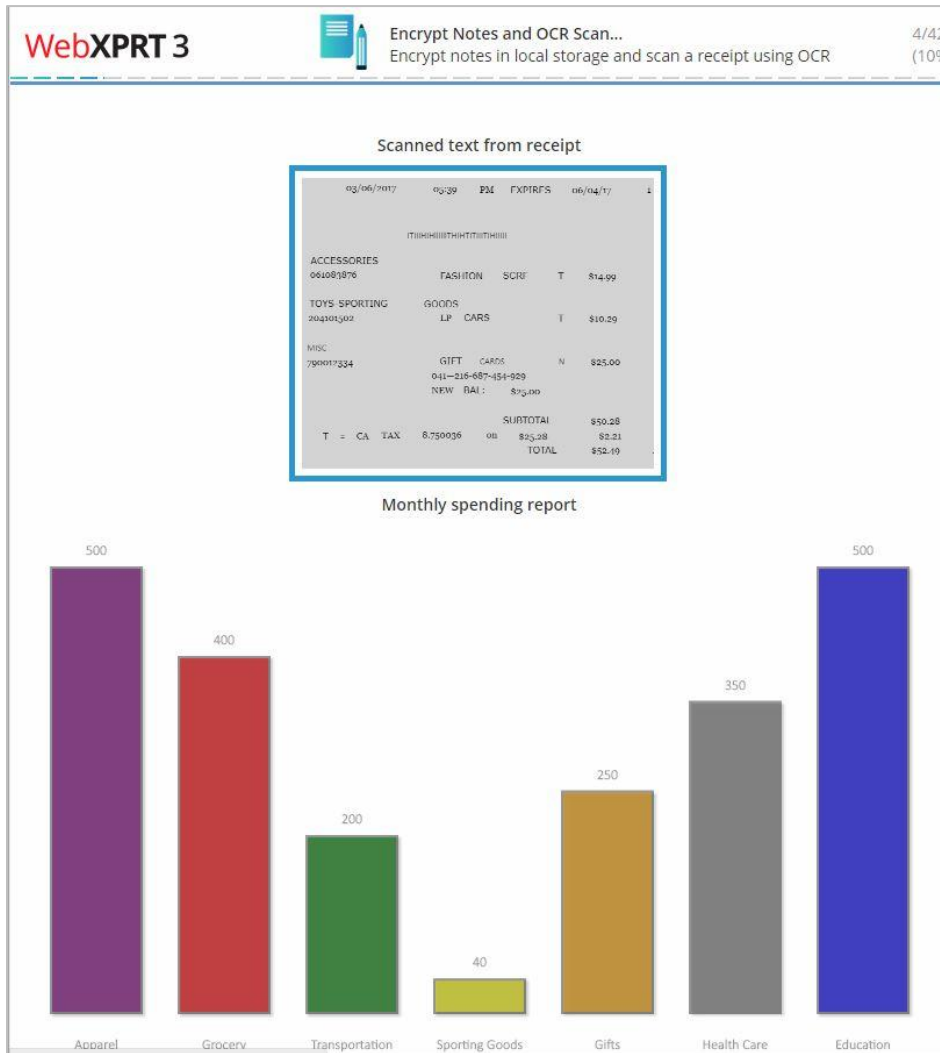


Figure 2: WebXPRT 3 during testing. Note the progress indication bar immediately below the header and the test completion percentage indicator in the upper right-hand corner.

After the test completes, the results screen offers the option to download or submit your results, and to run the test again. To see the Test ID number and score confidence interval, click the drop-down arrow next to Test Details. Again, you may need to scroll to see all the controls.

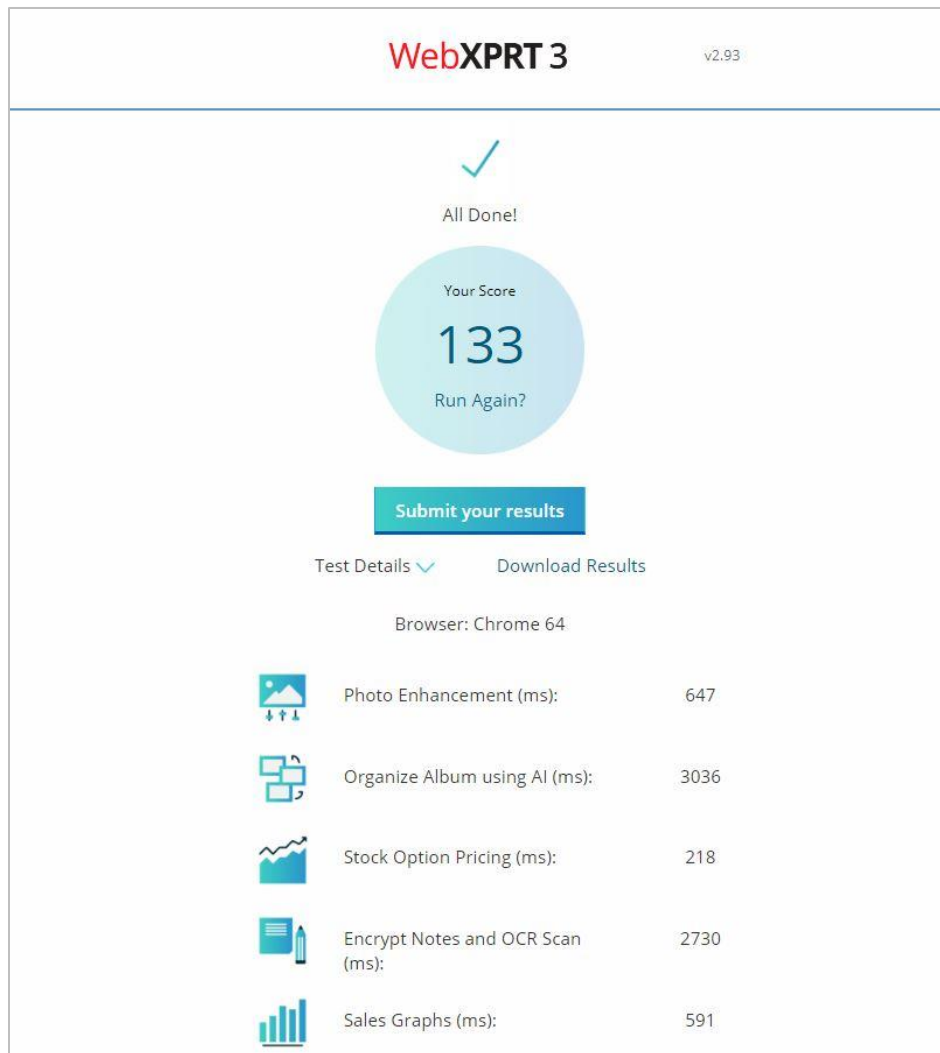


Figure 3: The WebXPRT 3 results screen.

### Submitting results

To submit results after a run, click the Submit your results button below the overall score, complete the short submission form, and click Submit. The results submission form requires the following system information:

- Device name
- Model number
- Processor
- Memory
- Operating system
- Browser and version

Please be as specific as possible when filling in the system information fields. Detailed device information helps us assess whether individual scores represent valid test runs.

We also ask submitters to enter a contact email address in case we need to ask follow-up questions about the submission. After you submit your score, we'll contact you to confirm the name we should display as the source for the data. You can use one of the following:

- Your first and last name.
- "Independent tester" (if you wish to remain anonymous).
- Your company's name (if you have permission to submit the result in their name). If you want to use a company name, we ask that you provide your work email address.

We will not publish any additional information about you or your company without your permission.

### To run the test using automation

You can run scripts to automate WebXPRT 3 testing, controlling the execution of WebXPRT 3 using parameters and values appended to the WebXPRT URL. WebXPRT has three available parameters:

#### testtype

WebXPRT provides two test types:

- Core tests: 1
- Experimental tests: 2 (experimental tests are a feature we hope to include in future builds)

#### tests

This lets you specify the tests to run by using the following codes:

- Photo enhancement: 1
- Organize album using AI: 2
- Stock option pricing: 4
- Encrypt notes and OCR scan: 8
- Sales graphs: 16
- Online homework: 32

To run an individual test, use its code. You can specify multiple tests by using the sum of the codes. For example, to run Stocks (4) and Notes (8), use the sum of 12. To run all core tests, use 63, the sum of all the individual test codes ( $1+2+4+8+16+32 = 63$ ).

#### result

You can also select the format of the results:

- Display the result as an HTML table: 1
- Display the result as XML: 2
- Display the result as CSV: 3
- Download the result as CSV: 4

To use the automation feature, start with the URL

[http://www.principledtechnologies.com/benchmarkxpert/webxpert/2018/3\\_v5/](http://www.principledtechnologies.com/benchmarkxpert/webxpert/2018/3_v5/), then append a question mark (?) and add the parameters and values separated by ampersands (&). For example, to run all the core tests and download the results, you would use the URL

[http://principledtechnologies.com/benchmarkxpert/webxpert/2018/3\\_v5/auto.php?testtype=1&tests=63&result=4](http://principledtechnologies.com/benchmarkxpert/webxpert/2018/3_v5/auto.php?testtype=1&tests=63&result=4).

## Changes between WebXPRT 2015 and WebXPRT 3

WebXPRT 3 shares core harness and workload structures with WebXPRT 2015, except for a few changes and additions, which we have detailed below.

### Harness and UI changes

1. We changed the UI to a mobile-first UI using ZURB Foundation (<https://foundation.zurb.com/>).
2. We began caching harness CSS, JS files, and some workload data files to decrease the benchmark's run time.
3. The PHP team deprecated MySQL functions in PHP 5.5.x and above, so we moved from MySQL to MySQLi.
4. We implemented new UI colors, styles, and fonts.

### Workload additions and changes

1. Workload timers: WebXPRT now uses `DOMHighResTimeStamp` (<https://developer.mozilla.org/en-US/docs/Web/API/Performance/now>) workload timers, accurate to five thousandths of a millisecond (5 microseconds).
2. Photo Enhancement: We updated three photos in the Photo Enhancement workload. The photo size is now 1024 x 768 pixels. The workload reports the total time taken to apply the effects to six photos.
3. Organize Album using AI: We updated the "Organize Album" workload in WebXPRT 3 and changed the workload description to "Detects faces and classifies images using the ConvNetJS neural network library." The workload now organizes two albums:
  - a. Album 1: The first task uses the same workload as WebXPRT 2015, with updated images. This workload organizes five images using `ccv.js` and `face.js`, ported to JavaScript by Dr. Liu Liu (<https://github.com/liuliu/ccv/tree/stable/js>).
  - b. Album 2: We added image classification using AI to the second task through `convnet.js`. The workload classifies (labels) five images in an album using ConvNetJS (<http://cs.stanford.edu/people/karpathy/convnetjs/>). We obtained the model we use from the sample "Classify CIFAR-10 with Convolutional Neural Network" (<http://cs.stanford.edu/people/karpathy/convnetjs/demo/cifar10.html>). The model is trained on the Cifar10 dataset (<https://www.cs.toronto.edu/~kriz/cifar.html>) using ConvNetJS.

The workload reports the total time taken to organize the two albums.

4. Stock Option Pricing: We changed the workload description to "Calculates and displays graphics views of a stock portfolio using Canvas, SVG, and `dygraph.js`." We updated the `dygraph.js` library to version 2.0 (<http://dygraphs.com/download.html>). We updated the data file

(sp500\_20131201\_20140601.json) and changed the range of years to end in 2017 so the UI is up to date. The workload reports the total time taken to create and display three graphs.

5. Encrypt Notes and OCR Scan: We updated the “Offline Notes” workload in WebXPRT 3 and changed the workload description to “Encrypts notes in local storage and scans a receipt using OCR.” The workload now uses an Optical Character Recognition (OCR) function to scan text. The workload reports the total time taken to sync notes, extract text from a scanned receipt, and add the scanned text to a spending report.
6. Sales Graphs: We changed the workload description to “Calculates and displays multiple views of sales data using InfoVis and d3.js.” We updated the d3.js library to version 4 (<https://d3js.org/>). We also updated the data file (salesData.json) and changed the range of years to end in 2017 so the UI is up to date. We changed the default settings for the pie graph to not use animation while creating the graph. The workload reports the total time it takes to calculate and display seven views of sales data.
7. Online Homework: We changed the “Explore DNA Sequencing” workload to Online Homework and changed the workload description to “Performs science and English homework using Web Workers and Typo.js spell check.”. This workload includes DNA sequencing and spell check tasks. Both tasks use regex, arrays, strings, and Web Workers.
  - a. We updated the DNA sequencing function that finds Open Reading Frames (ORFs) to use regex. This algorithm is faster than the previous version, and fixes an issue caused by a loop overrun.
  - b. We added a spell check workload based on typos.js (<https://github.com/cfinke/Typo.js/>). The workload uses Hunspell-style dictionaries. We took the text we use in the workload from “The Yosemite” by John Muir ([http://vault.sierraclub.org/john\\_muir\\_exhibit/writings/the\\_yosemite/chapter\\_1.aspx](http://vault.sierraclub.org/john_muir_exhibit/writings/the_yosemite/chapter_1.aspx)). The workload reports the total time taken to review DNA and spell-check an essay.

## Bugs and limitations

At the time of the general release, WebXPRT 3 contained no known bugs or limitations.

## License information

Below, we list license information for the software used in each of WebXPRT 3’s workloads.

1. Photo Enhancement: MOZILLA PUBLIC LICENSE Version 1.1 – included in photoedit\scripts\effects.js.
2. Organize Album using AI: Face detection: The following text is included in facedetect\scripts\ccv.js  
Copyright (c) 2010, Liu Liu.

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* Neither the name of the authors nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Convnet.js: The following text is included in facedetect\scripts\convnet.js

The MIT License

Copyright (c) 2014 Andrej Karpathy

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions: The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

3. Stock Option Pricing: The following text is included in stocksdash\JS\dygraph.min.js.

@license Copyright 2017 Dan Vanderkam (danvdk@gmail.com) MIT-licensed  
(<http://opensource.org/licenses/MIT>)

4. Encrypt Notes and OCR Scan: localstoragedb: The following license is included in notes\scripts\localstorage.min.js.

License : MIT License

Tesseract.js: The full Apache license is included in notes\LICENSE

Apache License

Version 2.0, January 2004

<http://www.apache.org/licenses/>

5. Sales Graphs:

For d3.js, we use a BSD 3-clause "New" or "Revised" license. The license is included under productivity\scripts\LICENSE.txt.

The InfoVis Tool Kit (jit-yc.js) license is from <http://philogb.github.io/infovis>.

Copyright (c) 2011 Sencha Inc. - Author: Nicolas Garcia Belmonte (<http://philogb.github.com/>)

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions: The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

6. Online Homework: The license is in the onlinehw\scripts\sequencingFuncs.js file. The DNA sequencing uses the following license:

The Sequence Manipulation Suite. Copyright (C) 2000, 2004 Paul Stothard. This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.

See the GNU General Public License for more details. You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 59 Temple Place - Suite 330, Boston, MA 02111-1307, USA.



Typos.js: The license is included at onlinehw\scripts\ license.txt. Copyright (c) 2011, Christopher Finke. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* The name of the author may not be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR FINKE BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.