

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AO KASPERSKY LAB,
Petitioner

v.

OPEN TEXT INC.
Patent Owner

Case IPR2023-00895
Patent No. 10,284,591

**DECLARATION OF PROFESSOR NENAD MEDVIDOVIC, PH.D.
IN SUPPORT OF PATENT OWNER'S RESPONSE TO PETITION**

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IPR2023-00895
Open Text Inc. EX-2001

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EXHIBIT LIST

Ex.	Description
2001	Declaration of Professor Nenad Medvidovic, Ph.D in Support of Patent Owner’s Preliminary Response To Petition
2002	<i>Curriculum Vitae</i> of Professor Nenad Medvidovic, Ph.D.
2003	<i>Webroot, Inc. and Open Text Inc., v. AO Kaspersky</i> , Case No. 6:22-cv-00243, Complaint for Patent Infringement, Dkt. 1 (W.D. Tex., March 4, 2022)
2004	<i>Sonrai Memory Ltd. v. Kingston Tech. Co. and Kingston Tech. Corp.</i> , Case No. 6:21-cv-1284-ADA, Order Denying Kingston Tech. Co. and Kingston Tech. Corp.’s Opposed Motion to Stay Pending Resolution of <i>Inter Partes</i> Review, Dkt. 94 (W.D. Tex., Oct. 18, 2022)
2005	<i>mCom IP, LLC v. Cisco Systems, Inc.</i> , Case No. 6:22-cv-00261-ADA, Order Denying Defendant’s Motion to Stay Pending <i>Inter Partes</i> Review, Dkt. 42 (W.D. Tex., Oct. 20, 2022)
2006	<i>Intellectual Ventures I LLC et al. v. Hewlett Packard Enterprise Co.</i> , No. 6:21-cv-00596-ADA, Order Denying Hewlett Packard Enterprise Company’s Opposed Motion to Stay Pending Resolution of <i>Inter Partes</i> Review, Dkt. 104 (W.D. Tex., Dec. 22, 2022)
2007	<i>Webroot, Inc. and Open Text Inc., v. AO Kaspersky Lab. et al.</i> , Case No. 6:22-cv-243-ADA-DTG, Dec. 9, 2022 Transcript of Motions Hearing, Dkt. 133 (W.D. Tex. Dec. 15, 2022) (excerpted)
2008	Dani Kass, “Catching Up On Patent Litigation With Judge Albright” (Law360 Mar. 14, 2023); https://www.law360.com/pulse/articles/1582438/print?section=pulse/courts
2009	<i>Webroot, Inc. and Open Text Inc., v. AO Kaspersky Lab. et al.</i> , Case No. 6:22-cv-243-ADA-DTG, Order Granting Fifth Amended Scheduling Order, Dkt. 252 (W.D. Tex. March 29, 2023)

Ex.	Description
2010	U.S. District Courts—Federal Court Management Statistics—Profiles—During the 12-Month Periods Ending March 31, 2018 Through 2023, “Table N/A—U.S. District Courts—Combined Civil and Criminal Federal Court Management Statistics (March 31, 2023)”, available https://www.uscourts.gov/sites/default/files/data_tables/fcms_na_dist_profile0331.2023.pdf
2011	<i>Webroot, Inc. and Open Text Inc., v. AO Kaspersky Lab. et al.</i> , Case No. 6:22-cv-243-ADA-DTG, Defendant’s Preliminary Invalidity Contentions, Appx. B (W.D. Tex., Sept. 14, 2022)
2012	<i>Webroot, Inc. and Open Text Inc., v. Sophos Ltd.</i> , Case No. 6:22-cv-240-ADA-DTG, Defendant’s Preliminary Invalidity Contentions (W.D. Tex., Sept. 13, 2022)
2013	<i>Webroot, Inc. and Open Text Inc., v. AO Kaspersky Lab. et al.</i> , Case No. 6:22-cv-243-ADA-DTG, Claim Construction Order, Dkt. 236 (W.D. Tex. Mar. 16, 2023)
2014	<i>Setting Repository Visibility</i> , GITHUB DOCS, https://docs.github.com/en/repositories/managing-your-repositorys-settings-and-features/managing-repository-settings/setting-repository-visibility (last visited Sept. 11, 2023)
2015	<i>Calendar of archives for</i> https://github.com/ivanfratric/ropguard , INTERNET ARCHIVE WAYBACK MACHINE, https://web.archive.org/web/20180401000000*/https://github.com/ivanfratric/rop-guard (last visited Sept. 11, 2023)
2016	<i>Reviewing Your Security Log</i> , GITHUB DOCS, https://docs.github.com/en/authentication/keeping-your-account-and-data-secure/reviewing-your-security-log (last visited Sept. 11, 2023)

I, Professor Nenad Medvidovic, declare as follows:

1. I have been engaged by King & Spalding LLP on behalf of OpenText Inc. (“Patent Owner”), to provide this Declaration concerning the technical subject matter relevant to the petition for Inter Partes Review (“Petition”) of U.S. Patent 10,284,591 (“the ’591 patent”).

2. I am over 18 years of age. I have personal knowledge of the facts stated in this Declaration and could testify competently to them if asked to do so.

3. I have reviewed and am familiar with the specification and the claims of the ’591 patent. In general, I will cite to the specification of a United States patent using the following formats: (Exhibit No. Col:Line Number(s)) or (Exhibit No. Paragraph Number(s)). For example, the citation (EX-1001 1:1–10) points to the ’591 Patent specification at column 1, lines 1–10. Also, for convenience, I use italics to denote limitations from the challenged claims.

4. All the opinions in this Declaration are based on the documents I reviewed and my knowledge and professional judgment. In forming the opinions expressed in this Declaration, I reviewed the Petition for *Inter Partes* Review of U.S. Patent No. 10,284,591 and supporting exhibits, as well as those Exhibits attached to the Patent Owner Preliminary Response.

5. I have been asked to provide my technical opinions regarding how a person of ordinary skill in the art would have understood the claims of the ’591

patent at the time of the alleged invention. I have also been asked to provide my technical opinions on how concepts in the '591 patent specification relate to claim limitations of the '591 patent. In reaching the opinions provided herein, I have considered the '591 patent, its prosecution history, and the references cited above and have drawn as appropriate on my own education, training, research, knowledge, and personal and professional experience.

I. QUALIFICATIONS

6. In formulating my opinions, I have relied on my knowledge, training, and experience in the relevant field, which I will summarize briefly. A more detailed summary of my background, experience, and publications is set forth in my curriculum vitae (CV), which is submitted as Exhibit 2002.

7. I received a Bachelor of Science degree, Summa Cum Laude, from Arizona State University's Computer Science and Engineering department.

8. I received a Master of Science degree from the University of California at Irvine's Information and Computer Science department.

9. I received a Doctor of Philosophy degree from the University of California at Irvine's Information and Computer Science department. My dissertation was entitled "Architecture-Based Specification-Time Software Evolution."

10. For nearly 30 years, my research has focused on the building blocks that comprise software systems: software components (computational and data elements) and connectors (interaction-facilitating elements), and mechanisms for their implementation, primarily middleware facilities and software frameworks. In particular, my Ph.D. dissertation—whose first research results were published in 1995 while the dissertation was completed in 1999—yielded a new design style for the development and evolution of highly distributed software systems built out of independent components that exchange different types of information encoded in messages in order to accomplish specific goals. This research focused on the design principles behind such systems, the appropriate support for modeling the systems (both at the level of individual agents as well as their integrations into subsystems and entire systems), and the infrastructure for their implementation, deployment, and optimization. This work was applied across a wide range of domains, from traditional distributed systems to mobile devices and autonomous robots.

11. I am employed by the University of Southern California (“USC”) as a faculty member in the Computer Science Department and have been since January 1999. I currently hold the title of Professor with tenure. Since July 2022, I have served as my department’s Chairman. Between January 2009 and January 2013, I served as the Director of the Center for Systems and Software Engineering at USC. Between July 2011 and July 2015, I served as my Department’s Associate Chair for

Ph.D. Affairs. Between July 2021 and June 2022, I served as my Department's Vice-Chair for Tenure Affairs.

12. I teach graduate and undergraduate courses in Software Architecture, Software Engineering, and Embedded Systems, and I advise Ph.D. students. I have graduated 19 Ph.D. students and advise 10 students currently pursuing a Ph.D.

13. I served as Program Co-Chair for the flagship conference in my field—International Conference on Software Engineering (“ICSE”)—held in May 2011. I have served as Chair or Co-Chair for various other conferences in the Software Engineering field, including: the Fifth Working Institute of Electrical and Electronics Engineers (“IEEE”)/IFIP Conference on Software Architecture, the Third IEEE International Conference on Self-Adaptive and Self-Organizing Systems, the Fifteenth International Association for Computing Machinery’s (“ACM”) Special Interest Group on Software Engineering (“SIGSOFT”) Symposium on Component Based Software Engineering, the IEEE/CSSE/ISE Workshop on Software Architecture Challenges for the 21st Century, and the Doctoral Symposia at the Sixteenth ACM SIGSOFT International Symposium on the Foundations of Software Engineering and at the 44th International Conference on Software Engineering. I am currently serving as General Co-Chair of the 21st International Conference on Software Architecture (ICSA 2024).

14. I serve or have served as an editor of several peer-reviewed journals, including: “IEEE Transactions on Software Engineering,” “ACM Transactions on Software Engineering and Methodology,” “Journal of Software Engineering for Robotics,” “Elsevier Information and Software Technology Journal,” “Journal of Systems and Software,” “Journal of Software Engineering Research and Development,” and “Springer Computing Journal.” Additionally, I have served as a guest editor of several special issues for different journals. Since January 2018, I have served as Editor-in-Chief of “IEEE Transactions on Software Engineering.”

15. Between September 2013 and September 2015, I served as Chair of the ICSE Steering Committee. Both prior to that (2008-2013) and subsequent to that (2015-present) I have been a member of the ICSE Steering committee. I am currently a member of the Steering Committee of the joint European Conference on Software Engineering and the Symposium on the Foundations of Software Engineering (“ESEC/FSE”). From July 2015 to September 2017, I chaired the Steering Committee of FSE, while it was a standalone symposium. I previously served as a member of the Steering Committees of the Working IEEE/IFIP Conference on Software Architecture.

16. Between July 2015 and June 2018, I served as Chair of the ACM SIGSOFT, the largest professional organization in my field of work. During the past

year, I have chaired the Committee in charge of ACM's Software System Award, one of the most important technical awards given in my field.

17. I co-authored "Software Architecture: Foundations, Theory, and Practice," a widely used textbook in the field of Software Systems' Architecture.

18. I have served as editor of various books in the Software Engineering field including: "Proceedings of the 3rd International Conference on Self-Adaptive and Self-Organizing Systems," "Proceedings of the Warm-Up Workshop for the 32nd International Conference on Software Engineering," "Proceedings of the 5th Working IEEE/IFIP Conference on Software Architecture," and "40 Editions of ICSE – The Ruby Anniversary Celebration."

19. I have authored or co-authored nearly 300 papers in the Software Engineering field. My most cited paper has been cited well over 3,000 times. A paper I co-authored in the 1998 International Conference on Software Engineering, my field's flagship conference, was given ten years later, in 2008, that conference's Most Influential Paper Award. Another one of my publications received a Most Influential Paper Award in 2020. Several of my other publications have received "best paper" or "most cited" awards."

20. Several of my publications have focused on different aspects of computer security. A paper describing a security-vulnerability detection tool for Android devices, built in my lab, won the Best Tool Paper award at the 2017

Automated Software Engineering Conference. And in May 2023, I was inducted into the University of California Irvine Donald Bren School of Information and Computer Science Alumni Hall of Fame. I have co-authored three patents in the area of cybersecurity.

21. I have been named a Distinguished Scientist of the ACM. I have been elected a Fellow of the IEEE, IEEE's highest grade that is granted to less than 0.1% of its membership annually.

II. UNDERSTANDING OF RELEVANT LEGAL PRINCIPLES

22. I am not a lawyer, and I will not provide any legal opinions. Although I am not a lawyer, I have been advised certain legal standards are to be applied by technical experts in forming opinions regarding the meaning and validity of patent claims.

23. I understand that a patent claim is invalid if it is anticipated or obvious in view of the prior art, and that a claim can be unpatentable even if all of the requirements of the claim cannot be found in a single prior-art reference. I further understand that invalidity of a claim requires that the claim be anticipated or obvious from the perspective of a person of ordinary skill in the art at the time the invention was made.

24. I have been informed that a patent claim is invalid if it would have been obvious to a person of ordinary skill in the art. In analyzing the obviousness of a

claim, I understand the following factors may be taken into account: (1) the scope and content of the prior art; (2) the differences between the prior art and the claims; (3) the level of ordinary skill in the art; and (4) any so called “secondary considerations” of nonobviousness if they are present.

25. I have been informed that a claim can be obvious in light of a single prior art reference or multiple prior art references. I understand that to prove that prior art or a combination of prior art renders a patent obvious, it is necessary to:

- 1) Identify the particular references that, singly or in combination, make the patent obvious;
- 2) Specifically identify which elements of the patent claim appear in each of the asserted references; and
- 3) Explain why a person of ordinary skill in the art would have combined the references, and how they would have done so, to create the inventions claimed in the patent. I further understand that exemplary rationales that may support a conclusion of obviousness include:
 - Combining prior art elements according to known methods to yield predictable results;
 - Simple substitution of known element for another to obtain predictable results;
 - Use of known technique(s) to improve similar devices (methods or products) in the same way;
 - Applying a known technique to a known device (method or product) ready for improvement to yield predictable results;

- “Obvious to try” – choosing from a finite number of identified, predictable solutions with a reasonable expectation of success;
- Known work in one field of endeavor may prompt variations of the work for use in either the same field or a different field based on design incentives or other market forces if the variations are predicable to a person of ordinary skill in the art; and
- Some teaching, suggestion, or motivation in the prior art that would have led a person of ordinary skill in the art to modify the prior art reference or to combine the prior art reference teachings to arrive at the claimed invention.

26. I have been informed that, in considering obviousness, hindsight reasoning derived from the patent-at-issue may not be used.

III. PETITIONER FAILS TO EXPLAIN HOW FRATRIC DISCLOSES EVERY LIMITATION OF THE '591 PATENT.

27. Petitioner’s explanation of why Fratric discloses “invoking one of the plurality of functions as a result of receiving a call from an application programming instance” as claimed in limitations 1.e, 9.f, and 17.e is flawed.

28. The '591 patent requires that one of the plurality of functions is invoked as a result of a call from an *application programming instance*. The Petitioner (and Dr. Subrahmanian) equate the application programming instance with “the ROP code.” (Petition 28-29; EX-1002 ¶122.) But, the ROP code is not an application programming instance and, therefore, does not satisfy these limitations.

29. As Dr. Subrahmanian explains, an instance is an individual occurrence of a class or object of a computer program. (EX-1002 ¶122.) A class is a blueprint or template of a computer object that can be instantiated or constructed to create objects, which are manipulatable versions of that class template. Thus, a class is a well-defined structure that is consistent and repeatably executable. It must be so in order for the program to create more occurrences of that class (i.e., more objects).

30. Classes and objects—and thus, by definition, instances—are also readily identifiable and consistent. The computer program manipulates the objects, created based on the definitions provided by classes, in order to execute the code. For code execution to occur effectively, the classes and objects must be easily accessible and predictable.

31. ROP code is not an application programming instance. ROP code is composed of stitched-together fragments of code that are used to engineer a functionality not intended by any individual piece of legitimate code. In order to do so, the exploit must manipulate the alignment of the stack and generate a control flow that jumps through memory *ad hoc*. Because ROP code is dependent on the alignment of the stack and intentionally executes code outside the bounds intended by legitimate code, ROP code is not consistent or repeatably executable. As a result, ROP code is not an application programming instance.

IV. CLAIMS AND/OR LIMITATIONS NOT ADDRESSED IN THIS DECLARATION

32. It is my understanding that this declaration is being provided in support of Patent Owner's Preliminary Response. The fact that I have not analyzed particular limitations or claims in no way indicates or supports that these limitations or claims are disclosed or rendered obvious by the prior art, and I reserve the right to supplement my analysis if asked to do so.

V. CONCLUSION

33. For the foregoing reasons, it is my opinion that Petitioner's grounds do not anticipate or render obvious any of the challenged claims of the '591 patent.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Executed this 11th day of September, 2023 in Los Angeles, California.

Respectfully submitted,



Nenad Medvidovic, Ph.D.