UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SHOPIFY, INC.,
Petitioner

v.

DDR HOLDINGS, LLC,
Patent Owner

Case IPR2018-01011
Patent 9,639,876

**DECLARATION OF ARTHUR M. KELLER, PH.D.
IN SUPPORT OF PATENT OWNER'S RESPONSE**

Keller Declaration re: U.S. Patent 9,639,876 (Ross et al.)

I, Arthur M. Keller, hereby declare as follows:

1.   I make this declaration at the request of Patent Owner DDR Holdings, LLC in the above-captioned IPR proceeding. I have reviewed certain materials and express my opinions that none of the grounds stated in the Petition filed by Shopify, Inc. anticipate or render obvious the Ross et al. patent identified in the caption.

2.   I have been retained by DDR as an expert and am being compensated for my time. My compensation is not dependent on the outcome of this proceeding, the results of my analysis, or on the substance of my opinions and testimony. I have no interest in the outcome of this matter. I have no financial interest in any of the companies in Petitioner nor in DDR, nor in the Ross patent. I have had no contact with the named inventors in connection with this IPR.

3.   My background includes three computer-science degrees, work in research and in academic positions on various aspects and computers and the Internet. I have been involved as an expert for DDR in a prior trial in 2012.

4.   I was awarded a Bachelor of Science degree in 1977 from Brooklyn College, with majors in Mathematics and in Computer and Information Science. I obtained a Master of Science degree and doctorate degree in Computer Science from Stanford University in 1979 and 1985, respectively.

5.   From 1974 to 1977, I was a Systems Analyst at Brooklyn College. In 1977, I also worked as an Instructor at Brooklyn College. In 1980, I worked at IBM as a Summer Research Assistant. In 1981, I again worked at IBM, as an Academic Associate. From 1977 to 1985, I worked in various roles in the Computer Science Department at Stanford University, mostly while a graduate student. My roles included working as a Research Associate, Research Assistant, Acting Assistant Chairman, and Instructor.

6.   I later continued my work at Stanford University in various other academic capacities. In particular, I was a Visiting Assistant Professor from 1987 to 1989, a Research Associate from 1989 to 1991, a Research Scientist from 1991 to 1992, and a Senior Research Scientist from 1992 to 1999.

7.   From 1985 to 1989, I worked as an Assistant Professor and an Adjunct Assistant Professor at the University of Texas at Austin in the Department of Computer Sciences. Since 2001, I have been a Visiting Associate Professor, Lecturer, and Researcher in various departments at the Baskin School of Engineering at the University of California, Santa Cruz.

8.   I have provided advice to startups, including as co-Founder, Board member, Chief Data Scientist, and CFO of PSYCHeANALYTICS, Inc., and co-Founder, Board member, and CFO of Active Ion Displays, Inc. Throughout my career, I have worked at various other institutions and businesses. For further

details regarding my employment and academic history, as well as publications and memberships, please refer to my *curriculum vitae*, a true and correct copy of which is being presented as Exhibit 2026.

9.   As shown on Exhibit 2026, I had extensive experience in the field of Internet technology, including commerce on the Internet, around the time of the invention of the Ross patent. For example, in Summer 1997, I worked as co-organizing instructor at the Western Institute for Computer Science on various Internet commerce subjects. I became Chief Technical Advisor and Board member of Persistence Software, which went public in June 1999. I served as Stanford University's project manager for CommerceNet, a consortium promoting electronic commerce on the Internet, between 1993 and 1997. I participated in the Stanford Computer Forum, Computer Science Dept. Web Presence committee from 1996-98. I published a journal article on virtual catalogs in 1996 and 1997. I gave invited presentations on virtual catalogs and virtual information systems, including publishing in refereed proceedings, on a half-dozen occasions in 1994-1996, and gave presentations on information integration and comparing central and distributed indexing in 1997.

10.   In connection with preparation of this declaration, I considered the materials listed in this paragraph. From this proceeding: Petition, Patent Owner's Preliminary Response, Institution Decision (including from other IPRs filed by

Shopify), and Scheduling Order, Petitioner's Exhibits 1001-11 and 1017-22, and Patent Owner Exhibits 2001-09, 2010-12, 2015, 2017, 2021, and 2027-33. From copending proceeding IPR2018-00482: Petition, Patent Owner Preliminary Response, Institution Decision, various exhibits, and Patent Owner Response. From the prior lawsuit: The "Expert Report of Peter Kent Regarding the Invalidity of the '135, '572 and '399 Patents," dated May 18, 2012, the "Rebuttal Expert Report of Arthur M. Keller, Ph.D. Regarding Validity Of United States Patent Nos. 6,629,135, 6,993,572, and 7,818,399," dated June 29, 2012, and the court decisions *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1258-59 (Fed. Cir. 2014), *aff'g in relevant part,* 954 F. Supp. 2d 509 (E.D. Tex. 2013). In addition, I reviewed Darnell, *HTML 4 Unleashed* (1998), various materials regarding URL length, and any other documents cited herein.

11.   I am familiar with the standards of anticipation and obviousness. I have testified on and have provided expert reports on such questions on multiple occasions.

12.   I have reviewed the portion of the Institution Decision construing certain claim terms used in independent claims, and I utilized the following constructions in formulating my opinions stated herein:

13.   "Merchant": "Producer, distributor, or reseller of goods or services to be sold."

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