UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

INTEL CORPORATION,
Petitioner,

v.

FG SRC LLC,
Patent Owner.

IPR2020-01449
Patent No. 7,149,867

DECLARATION OF WILLIAM MANGIONE-SMITH, PH.D., IN SUPPORT OF FG SRC LLC'S RESPONSE TO PETITION

I, Dr. William Mangione-Smith, under the penalty of perjury under the laws of the United States, declare that the following is true and correct based on the best of my ability.

Date: July 2, 2021 Signed: 

WILLIAM MANGIONE-SMITH, PH.D.

1. I have been retained by DiMuro Ginsberg, P.C., as an independent technical expert in the Inter Partes Review dispute between FG SRC, and Intel Corp, case, No. IPR2020-01449 which involves U.S. Patent No. 7,149,867 ("'867 Patent").

2. I have been paid for my work as a technical expert at my customary hourly rate. My compensation does not in any way depend on the outcome of this matter, and I have no personal interest in the outcome of this matter.

I. Qualifications

3. My technical background and experience cover most aspects of computer system design, including low level circuitry, computer architecture, computer networking, digital rights management, cryptography, digital media, communications, information technology, application software, client-server application, Web technology, and system software (*e.g.*, operating systems and compilers). I am a member of the Institute of Electrical and Electronics Engineers and the Association for Computing Machinery, which are the two most significant professional organizations in my profession. I have been employed as a design engineer, research engineer, professor, and technical expert. Over my professional career, I have been an active inventor with 121 issued U.S. patents, 200 published and pending U.S. patent applications and many unpublished U.S. patent applications.

4. From 1984 until 1991, I attended the University of Michigan in Ann Arbor, Michigan, where I was awarded the degrees of Bachelor of Science and Engineering, Master of Science and Engineering, and Doctor of Philosophy. My doctoral research focused on high performance computing systems including computer architecture, applications and operating system software, and compiler technology. One of my responsibilities during my graduate studies included teaching senior undergraduate students who were about to enter the profession.

5. After graduating from the University of Michigan, I was employed by Motorola in Schaumburg, Illinois. While at Motorola, I was part of a team designing and manufacturing the first commercial battery-powered product capable of delivering Internet email over a wireless (*i.e.*, radio frequency) link and one of the first personal digital assistants. I also served as the lead architect on the second-generation of this device with control over the entire system design including the memory subsystem architecture, embedded processor, ASIC, power system, and analog circuitry. Part of my responsibilities at Motorola involved the specification, design, and testing of system control Application-Specific Integrated Circuits ("ASICs"). I conducted the initial research and advanced design that resulted in the Motorola M*Core embedded microprocessor. M*Core was designed to provide the high performance of desktop microprocessors with the low power of contemporaneous embedded processors. The M*Core received

widespread use in many communications products including various cellular handsets, advanced pagers, and embedded infrastructure.

6. From 1995 until 2005, I was employed by the University of California at Los Angeles ("UCLA") as a professor of Electrical Engineering. I was the director of the laboratory for Compiler and Architecture Research in Embedded Systems ("CARES") and served as the field chair for Embedded Computing Systems. The CARES research team focused on research, engineering, and design challenges in the context of battery-powered and multi-media mobile computing devices. One of the key developments of my lab was the Mediabench software tool, which is widely used to design and evaluate multi-media embedded devices. Key elements of Mediabench include software that is essential for modern digital wireless communications. My primary responsibility, in addition to classroom teaching, involved directing the research and training of graduate students. I was a tenured member of the faculty and had responsibilities for teaching as well as scholarly research. My colleagues at UCLA were some of the leading scientists and engineers in the world with a long list of innovations from computer network security devices to the nicotine patch. The graduate student researchers in my laboratory came from a diverse set of backgrounds, all with undergraduate degrees in computer engineering, electrical engineering, or computer science, many with multiple years of experience working as professional engineers in areas such as

digital rights management, cryptography, and some combination of digital media, communications, information technology, software development, computer system design, or computer science and ASIC circuit design.

7. From 2005 until 2009, I was employed at Intellectual Ventures in Bellevue, Washington. My responsibilities at Intellectual Ventures included business development, technology assessment, market forecasting, university outreach, collaborative inventing, intellectual property licensing support, and intellectual property asset pricing. My colleagues and co-inventors at Intellectual Ventures included the former lead intellectual property strategist at Intel, Intel's former lead IP counsel, Microsoft's former chief software architect, the founder of Microsoft research, the designer of the Mach operating system, the architect of the U.S. Defense Department's Strategic Defense Initiative, the founder of Thinking Machines (a seminal parallel processing computer system), and Bill Gates. I had responsibility for hiring and managing over 15 staff members including multiple Ph.Ds. with degrees in electrical engineering or computer science, and decades of experience in product design and engineering.

8. A summary of some of my qualifications for forming the opinions in this declaration are as follows: I have more than 30 years of experience as a computer architect, computer system designer, communication system designer, educator, and as an executive in the PC and electronics business. I am also a

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