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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT: 7,397,363 B2

INVENTOR: Raymond Anthony Joao

FILED: September 16, 2002

ISSUED: July 8, 2008

TITLE: Control and/or Monitoring Apparatus and Method

DECLARATION OF DAVID MCNAMARA

1. I, David McNamara, make this declaration in connection with a second petition for *inter partes* review of U.S. Patent No. 7,397,363 (“the ’363 patent”; Exhibit 1001 to the petition and this declaration). All statements herein made of my own knowledge are true, and all statements herein made based on information and belief are believed to be true. I am over 21 and otherwise competent to make this declaration. Although I am being compensated for my time in preparing this declaration, the opinions herein are my own, and I have no stake in the outcome of the *inter partes* review proceeding.

2. Attached to this declaration is my *curriculum vitae* (Exhibit 1014). As shown in my *curriculum vitae*, I have devoted my career to the field of automotive

electronics. I earned my Bachelor of Science degree in Electrical Engineering from the University of Michigan in 1973 and my Master of Engineering degree in Solid State Physics from the University of Florida in 1976.

3. Further, as shown in my *curriculum vitae*, I have professional and academic experience in the field of automotive electronics and transportation systems acquired over a career spanning 38 years. In particular, during this period, I have worked and otherwise interacted with professionals and students of various experience and expertise levels in the automotive electronics field. Yet, throughout, my primary focus has related to identifying, demonstrating, testing, and manufacturing new automotive and transportation systems embodied in complex hardware and software products. For example, I have been involved in the development and integration of various motor vehicle technologies, such as: embedded vehicle controllers; sensors and actuators as key elements in an engine control system; diagnostic/maintenance algorithms; multiplexes (or buses) to reduce wiring, provide a test/diagnostic capability, and to provide control for new convenience features (*e.g.*, power seat controls), anti-theft systems, Advanced Driver Assistance Systems (ADAS), such as Adaptive Cruise Control, and user interface hardware and software to implement voice-driven features/technology, audio systems, digital media and wireless communications. I am familiar with Ford's Voice Alert System launched in the early 1980s that used voice synthesis technology, well known at that time, to provide audible "voice alerts", such as the "door is ajar" activated by the electrical door

switch. I also have conducted extensive research on motor vehicle interfaces to permit the safe and easy integration of new electronic devices within a motor vehicle environment. Recently, I have worked on new automotive control and communication systems, called “connected automation” that use new wireless communications to communicate with road-side and other cars to enhance on-board sensors, such as radar and cameras. These new systems integrate on-board radar and camera sensors, in-vehicle control systems with important data about other cars and road conditions, which in the future will enable full autonomous driving.

4. I am currently a consultant for McNamara Technology Solutions LLC and work with clients in active safety (*e.g.*, mmWave radar based and camera based systems), automotive electrical/electronics architecture, and automotive wireless technology.

5. I also am an active member of the Society of Automotive Engineers, organizing technical sessions on Vehicle-to-Vehicle and Vehicle-to-Infrastructure Communications, Cybersecurity and Autonomous Driving and the Institute of Electrical and Electronics Engineers (IEEE), and I have been an invited speaker to various conferences, including the Telematics Update Events (www.telematicsupdate.com), at which I interact with various members of the technical community. I periodically publish reports on observed trends in automotive electronics, and also co-authored an invited paper for the Proceedings of the IEEE along with former Ford Research colleagues. This paper, *Control, Computing and*

Communications Technologies for the Twenty-first Century Model T by Jeff Cook, Fellow, IEEE, Ilya Kolmanovsky, Senior Member, IEEE, David McNamara, Member, IEEE, Edward Nelson, Member, IEEE, and Venkatesh Prasad, Member, IEEE describes the important developments in automotive electronics. I have contributed articles to the Intelligent Transport System (ITS) International Magazine (www.itsinternational.com), on Diagnostics/Prognostics and on the 2009 Consumer Electronics Show (CES). I report on consumer trends and sensor technology impacting the automotive industry as part of my annual CES report, which has been published since 2007. I am a member of the Association of Unmanned Vehicles International (www.auvsi.com) and affiliated with the University of Michigan Mobility Transformation Center, whose charter to test new autonomous driving systems.

6. I am a named inventor on five U.S. patents (U.S. Patent No. 4,377,851; U.S. Patent No. 4,446,447; U.S. Patent No. 5,060,156; U.S. Patent No. 5,003,801; and U.S. Patent No. 6,175,803) that resulted from the development of products for high-volume production. Of these, U.S. Patent No. 4,377,851 and U.S. Patent No. 4,446,447 relate to pressure sensors used in Ford vehicles, and U.S. Patent No. 5,060,156 relates to the oil change detection system used by Ford in high-volume production for several years.

Understanding of the Law

7. For the purposes of this declaration, I have been informed about certain aspects of the law that are relevant to my analysis and opinions, as set forth in this section of my declaration.

8. I understand that “claim construction” is the process of determining a patent claim’s meaning. I also have been informed and understand that the proper construction of a claim term is the meaning that a person of ordinary skill in the art (*i.e.*, the technical field to which the patent relates) would have given to that term at the patent’s filing date. My opinion and analysis with respect to claim construction are provided from the viewpoint of a person of ordinary skill in the art to which the ’363 patent pertains at the earliest possible priority date for the ’363 patent, which I am informed is March 27, 1996.

9. I understand that in *inter partes* review proceedings, a claim of an unexpired patent is to be given the broadest reasonable construction in light of the specification of the patent in which it appears, which is what I have done when performing my analysis in this declaration.

10. I understand that a patent claim is unpatentable as obvious if the subject matter of the claim as a whole would have been obvious to a person of ordinary skill in the art as of the time of the invention at issue. I understand that the following factors must be evaluated to determine whether the claimed subject matter is obvious: (1) the scope and content of the prior art; (2) the difference or differences, if any,

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