

GM 573

EDT

Song Choi

HTDC

Presentation Before the Senate Committee on Economic Development and Technology (EDT)

April 15, 2009

Song K. Choi

College of Engineering, University of Hawaii at Manoa

Chair Fukunaga, Vice Chair Baker, and Members of the Senate Committee on Economic Development and Technology, thank you for this opportunity to present background about myself in your consideration of my nomination to the Board of Directors of the High Technology Development Corporation.

I grew up in two very different societies. I was born in Seoul, Korea but moved to St. Louis, Missouri before I was seven. I then attended public and private schools in the United States and Asia and graduated from a foreign school in Korea. I then attended Worcester Polytechnic Institute in Worcester, Massachusetts on athletic and academic scholarships. Upon receiving my Bachelor of Science Degree in Mechanical Engineering specializing in mechanics and robotics with a minor in Business Administration, I pursued a Master of Engineering Degree in Mechanical Engineering with specialization in manufacturing and robotics with a minor in Computer Science at Carnegie Mellon University in Pittsburgh, Pennsylvania. I then returned to Hawaii to complete my Doctor of Philosophy in Mechanical Engineering with a concentration in controls and robotics with minors in manufacturing and computer science at the University of Hawaii at Manoa.

During all this schooling, I managed to work at the Robotics Institute of Carnegie Mellon University for three years in aiding my former advisor in establishing the Manufacturing Engineering Technology and Applications Center (METAC), a technology transfer group, to work closely with Pittsburgh and the Western Pennsylvania Associations of high technology companies. We established a consortium of companies which benefited from this state and industry collaboration where innovative financial incentives allowed efficient and effective use of their limited finances to achieve greater technological development for the companies. This was during the late 1980's where there were great leaps in technology innovation and development, but also much suspicion in what technology was going to displace. This was an exciting era in technology, but to me, it was a more interesting era in human development as workers began to adjust to and accept what we may be able to dub "high tech." The transition was not easy, and this experience coupled with marketing experience at an import/export company opened my perception of the natural coupling of engineering and business.

I have now had 25+ years of experience in various facets of mechanical, electrical, and

computer engineering in the field of land-based and underwater robotic vehicles where I have successfully conducted research projects in this arena at the University of Hawaii as a researcher, teacher, and administrator, and even have had the opportunity in creating a unique spin-off company and noticing and understanding the difference between academia and industry. However, when I ponder on this 'spin-off road', there were extreme bumps and valleys.

I would like to use my opportunity with the High Technology Development Corporation (HTDC) to infuse innovative methods of collaboration, both finance and engineering, in developing a sustainable high technology industry in Hawaii. These will include maintaining current technologies, such as construction, by infusing innovation to engineering and manufacturing to be more effective and efficient; nurturing technologies that have been in development to transition to production to bolster our industry; and investing in future innovation through novel partnerships, technology transfer, and industry incentives. We should also be able to use HTDC more efficiently and effectively to create various paths by which entrepreneurial endeavors can foster success. We are blessed with the inherent advantages of our geographic location and weather, and we need to utilize this to its fullest potential while maintaining our harmony with our people and our land.

The other development that I'd like to see at HTDC is more and more emphasis on incorporating and infusing aspects of manufacturing back into our society. We stereotypically view manufacturing as 'mass production', but in our technology driven society, manufacturing may be 'low production' of very high quality – maybe miniaturization techniques, methods, fabrication, etc. is one such path. Another may be the development of various methodologies in experimentations, maintenance, etc, which can be fabricated as a product for distribution.

Finally, HTDC has to be a part of the education of the community to ease the understanding and acceptance of technological developments so a 'shock' isn't felt when developments occur since perception is still majority of the solution.

This brings up an interesting question: Do we develop our industry first or do we develop our future workforce? In my opinion, industry always drives academia, and specific entities were created to resolve specific problems. HTDC needs to lead in helping to create new industries by effectively and efficiently utilizing its resources to its potential. I believe my diverse personality, background, education, and experience give me the necessary tools to assist in HTDC new era. I humbly ask for you to support my nomination to the Board of Directors of the High Technology Development Corporation. Thank you.

Name: Song K. Choi, Ph.D.

Present Position

- Assistant Dean, College of Engineering, University of Hawaii at Manoa, Honolulu, HI, Aug. 2004 – Present.

Work Experiences

- CEO/President, Marine Autonomous Systems Engineering, Inc., Honolulu, HI, Jan. 2001 – Present.
- Professor and Associate Director, Autonomous Systems Laboratory, Dept. of Mechanical Engineering, University of Hawaii at Manoa, Honolulu, HI Aug. 1997 – Present.
- Project Coordinator, Department of Mechanical Engineering, UH, Honolulu, HI, Aug. 1997 – Aug. 2000.
- Research Associate, Department of Mechanical Engineering, UH, Honolulu, HI, Aug. 1995 – Jan. 1996.
- Research Assistant, Department of Mechanical Engineering, UH, Honolulu, HI, Aug. 1991 – Aug. 1995.
- Project Manager & Engineer, Robotics Institute, CMU, Pittsburgh, PA., Aug. 1988 – Jun. 1991.
- Teaching Fellow, Department of Mechanical Engineering, CMU, Pittsburgh, PA, Aug. 1987 – Aug. 1988.
- Research Assistant, Department of Mechanical Engineering, CMU, Pittsburgh, PA, Aug. 1986 – Aug. 1988
- Head Consultant, International Technology & Knowledge Company, Pittsburgh, PA, Aug. 1988 – Jan. 1991.
- Research Engineer, Flexible Manufacturing Laboratory, CMU, Pittsburgh, PA, May 1987 – Oct. 1988.

Select Professional/Community/Committee Affiliations

- University of Hawaii at Manoa, Vice Chancellor of Academic Affairs Prioritization Committee (Present)
- University of Hawaii at Manoa, Pacific Asian Center for Entrepreneurship & E-Business (PACE, Present)
- Association for Unmanned Vehicle Systems International (AUVSI, 2008-Present)
- Robotics Organizing Committee (ROC, 2008-Present)
- Hawaii Korean Coordinating Council (HKCC, 2007-Present)
- Construction Career Day (CCD, 2006-Present)
- Hawaii Council of Engineering Societies (HCES, 2004-Present, Vice-Chair 2008, Chair 2009)
- University of Hawaii at Manoa, Manoa International Education Committee (MIEC, 2004-Present)
- University of Hawaii at Manoa, Academic Procedures Committee (APC, 2004-Present, Chair 2007)
- Korean American Coalition – Hawaii Chapter (KAC-HI, 2003-Present, Chair 2003-2008)
- Hawaii Korean Chamber of Commerce (HKCC, 2001-Present)
- Korean Christian Church, Finance, Building, & Grounds Committee (FBG, 1999-Present)
- Society of Automotive Engineers (SAE, 1996-Present)
- Korean Scientists and Engineers Association (KSEA, 1995-Present)
- Institute of Electrical and Electronics Engineers (IEEE, 1986-Present)
- American Society of Mechanical Engineers (ASME, 1982-Present)

Select Academic Activities

- Co-General Chair, Asia Pacific Underwater University Roboticians (APUURobo, 2005-2009)
- Program Committee Member & Social Chair, Conference on System Man Cybernetics (SMC, 2005 & 2006)
- Autonomous Underwater Vehicle Demonstrator, Undersea Defense Technology – Hawaii (UDT Hawaii 2004)
- Tutorials and Workshop Chair, International Conference on Intelligent Robots & Systems (IROS 2003)
- Local Arrangements/Exhibit Chairs, International Conference on Intelligent Robots & Systems (IROS 2001)
- Local Arrangements/Publication Chairs, International Symposium on Experimental Robotics (ISER 2000)
- Symposium Program Chair, Symposium on Underwater Robotic Technology (SURT 2000)
- International Program Committee, International Symposium on Intelligent Automation & Control (ISIAC 1996)
- Local Arrangements Co-Chair, International Symposium on Robotics & Automation (ISRAM 1994)
- Local Arrangements Co-Chair, Workshop on Future Research Directions in Underwater Robotics 1994
- Reviewer, IEEE Control Systems Magazine
- Reviewer, IASTED – Journal of Control & Computers
- Reviewer, IEEE Proceedings – Control Theory & Applications
- Reviewer, IEEE Transactions on Robotics & Automation
- Reviewer, IEEE Robotics & Automation Conference

Education

- Ph.D., Mechanical Engineering, University of Hawaii at Manoa, Dec. 1995. Minor: Computer Science.
- M.Eng, Mechanical Engineering, Carnegie Mellon University, Dec. 1988. Minor: Computer Science.
- B.S., Mechanical Engineering, Worcester Polytechnic Institute, May 1986. Minor: Business Administration. Distinction Honors (Magna Cum Laude).

Select Awards and Honor

- Office of Naval Research \$427,859 DURIP grant for June 2008 – May 2009
- Office of Naval Research \$485,952 research grant for November 2007 – October 2009
- Office of Naval Research \$754,000 research grant for October 2005 – September 2007.
- Office of Naval Research \$394,815 DURIP grant for April 2005 – March 2006.
- Office of Naval Research \$718,000 research grant for October 2004 – September 2006.
- Center for Excellence in Research in Ocean Sciences \$446,000 research grant for July 2004 – June 2006.
- Office of Naval Research \$913,000 research grant for October 2003 – December 2005.
- Office of Naval Research \$759,000 research grant for September 2002 – March 2004.
- Certificate of Honor from the Mayor of Honolulu, HI, August 2001.
- Provisional Patent (60/308,505) for a "run-flat" tire system, July 2001.
- Provisional Patent (60/302,876) for an underwater vehicle, June 2001.
- National Science Foundation \$45,000 research grant for April 1997 – June 2001.
- GSO Travel Fund Award of \$1500 from the University of Hawaii, August 1993.
- Certificate of Honor from the Mayor of Pittsburgh, PA, February 1989.
- Patent (suspended) for 4 wheel drive mechanism from the Worcester Polytechnic Institute, May 1986.
- WPI Athletic/Academic Scholarships from the Worcester Polytechnic Institute, 1982 – 1986.
- Who's Who in the World, Who's Who in America, Who's Who in Science and Technology, & Swatmore's.

Select Publications

- Marani, G., Choi, S.K., Yuh, J, "Underwater Autonomous Manipulation for Intervention Missions AUVs," **Ocean Engineering. Special Issue: AUV**, Oct. 2008.
- Choi, S.K., Menor, S.A., Brunete, A., & Nip, Alexander M., "A Real-Time Data-Based VR System," The Proceedings of the 2002 Underwater Defense Technology, Cheju Island, KOREA, Oct. 2002.
- Choi, S.K. and Yuh, J. (Editors), **Underwater Robotic Vehicle Technologies**, TSI Press, Albuquerque, NM, Jan. 2002.
- Choi, S.K. & Easterday, O.T., "An Underwater Vehicle Monitoring System and Its Sensors," **Experimental Robotics VII** (D. Rus & S. Singh, Editors), Springer, Berlin, Germany, Jul. 2001.
- Choi, S.K. & Yuh, J., "Semi-Autonomous Underwater Vehicle for Intervention Missions (SAUVIM)," **Sea Technology**, Oct. 1999.
- Yang, K.C, Yuh, J., & Choi, S.K., "Experimental Study of Fault-Tolerant System Design for Underwater Robots," **International Journal of System Science**, Sept. 1998.
- Choi, S.K. & Yuh, J., "Experimental Study on a Learning Control System with Bound Estimation for Underwater Robots," **Journal of Autonomous Robots**, Jun./Jul. 1996.
- Choi, S.K. et al, "Development of an Omni-Directional Intelligent Navigator," **IEEE Robotics and Automation Magazine**, Mar. 1995.
- Choi, S.K. et al, "Omni-Directional Intelligent Navigator," **Underwater Robotic Vehicle: Design and Control** (J. Yuh, Editor), TSI Press, Albuquerque, NM, 1995.

References

- Mr. Donald C.W. Kim, CEO, AMKOR Corporation, 808-842-1133
- Ms. Bennette M. Evangelista, Vice President, Government Services, Actus Lend Lease, 808-398-5988
- Dr. Brennon T. Moraoka, Director, Department of Transportation, 808-587-2150
- Mr. Gregory R. Kim, Founder and CEO, Virtual Law Parnters, 808-780-2495
- Mr. Clifton Ching, Director, Office of Naval Research – Hawaii, 808-284-6954
- Dr. Edward J. Shultz, Dean, School for Pacific and Asian Studies, University of Hawaii, 808-956-8818



LATE

LINDA LINGLE
GOVERNOR
THEODORE E. LIU
DIRECTOR
MARK K. ANDERSON
DEPUTY DIRECTOR

**DEPARTMENT OF BUSINESS,
ECONOMIC DEVELOPMENT & TOURISM**

No. 1 Capitol District Building, 250 South Hotel Street, 5th Floor, Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804
Web site: www.hawaii.gov/dbedt

Telephone: (808) 586-2355
Fax: (808) 586-2377

**Statement of
Theodore E. Liu
Director
Department of Business, Economic Development & Tourism**

before the
SENATE COMMITTEE ON ECONOMIC DEVELOPMENT & TECHNOLOGY
April 15, 2009
1:15 P.M.
State Capitol, Room 016

in consideration of
GM 573

**GOVERNOR'S MESSAGE 573
SUBMITTING FOR CONSIDERATION TO THE BOARD OF DIRECTORS OF
THE
HIGH TECHNOLOGY DEVELOPMENT CORPORATION,
GUBERNATORIAL NOMINEE, SONG K. CHOI
FOR A TERM TO EXPIRE JUNE 30, 2013.**

Chair Fukunaga, Vice Chair Baker, and Members of the Committee on Economic Development and Technology.

I am Theodore E. Liu, Director of the Department of Business, Economic Development and Tourism.

It is my distinct pleasure to be here today to testify in support of Dr. Song K. Choi's appointment to the Board of Directors of the High Technology Development Corporation, an agency of the State of Hawaii administratively attached to the Department of Business, Economic Development and Tourism.

Dr. Choi, a doctoral graduate of the University of Hawaii in mechanical engineering, is Assistant Dean at the University of Hawaii, College of Engineering, and is CEO and President of Marine Autonomous Systems Engineering, Inc. In these capacities as Assistant Dean and CEO in the private sector, he has been the recipient of numerous awards and honors from the U.S. Office of Naval Research, NELHA's Center for Excellence in Research in Ocean Sciences, and related professional affiliates.

Highly notable is Dr. Choi's long list of professional activities is his commitment and dedication of directing others to design and operate intelligent underwater robots and systems. I will not discuss these accomplishments, as they are provided in his resume, which is attached for your perusal.

We look forward to Dr. Choi's contributions as a member on the HTDC Board of Directors representing the public sector with knowledge, interest, and proven expertise. This appointment will fulfill a statutory requirement for a member on the HTDC Board from the faculty at the University of Hawaii, as defined in HTDC statutes (Chapter 206M, HRS).

Ms. Chair, Ms. Vice-Chair, and members of the committee, I thank you for the opportunity for your time today and your consideration of this request and appointment. I look forward, as does Dr. Choi, to any questions you may have for us.

LINDA LINGLE
GOVERNOR



BRENNON T. MORIOKA
DIRECTOR

Deputy Directors
MICHAEL D. FORMBY
FRANCIS PAUL KEENO
BRIAN H. SEKIGUCHI
JIRO A. SUMADA

IN REPLY REFER TO:

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

April 15, 2009

TESTIMONY OF DR. BRENNON T. MORIOKA

GOVERNOR'S MESSAGE NO. 573

COMMITTEE ON ECONOMIC DEVELOPMENT AND TECHNOLOGY

I would like to support the nomination of Dr. Song K. Choi to the Board of Directors of the High Technology Development Corporation.

Dr. Choi is very involved in the shaping of Hawaii's future by providing Hawaii's youth with the tools to work in a world that must be able to harness the possibilities and potential of technology in order to succeed in a twenty-first century economy. His focus and expertise in the components that make STEM so important would serve this board well and his contributions to setting the direction of how to best take advantage of an ever changing asset would be invaluable.

I have worked with Dr. Choi on many occasions and in various settings and he has never failed to impress me with his diligence at which he pursues his work and the passion at which he approaches the challenges in front of him. He has demonstrated that his commitment to his profession is based on his desire to see the young leaders of Hawaii grow and develop as critical thinkers. Having someone intimately involved with developing the training of tomorrow's problem solvers and our future work force would be a tremendous addition to a board whose mission is to nurture and develop Hawaii's high technology sector.

I am hopeful you will find favor with Dr. Choi's nomination to the High Technology Development Corporation Board of Directors.

Written Statement of
YUKA NAGASHIMA
Executive Director & CEO
High Technology Development Corporation
before the
**SENATE COMMITTEE ON
ECONOMIC DEVELOPMENT AND TECHNOLOGY**
Wednesday, April 15, 2009
State Capitol, Conference Room 016
1:15 P.M.
In consideration of

GOVERNOR'S MESSAGE 573
**SUBMITTING FOR CONSIDERATION TO THE BOARD OF DIRECTORS OF THE
HIGH TECHNOLOGY DEVELOPMENT CORPORATION,
GUBERNATORIAL NOMINEE, SONG K. CHOI
FOR A TERM TO EXPIRE JUNE 30, 2013.**

Chair Fukunaga, Vice Chair Baker, and Members of the Committee.

It is my pleasure to support the appointment of Song K. Choi to the Board of Directors of the High Technology Development Corporation (HTDC).

Dr. Choi's academic credentials include an undergraduate degree from Polytechnic Institute in Worcester, Massachusetts, master's degree in mechanical engineering from Carnegie Mellon University in Pittsburgh, Pennsylvania, and a doctorate in mechanical engineering from the University of Hawaii.

In addition to his academic excellence, Dr. Choi has more than twenty-five years of work-related experience primarily as a scientist, researcher, teacher, and administrator of underwater and undersea robotic vehicles projects and programs. Most notably with respect to HTDC's mission of growing Hawaii's high tech commercial industry, Dr. Choi has helped to create a university spin-off tech company.

As the representative from Hawaii's largest academic research institution on the HTDC Board of Directors, Dr. Choi can be instrumental to facilitating the transfer of technologies developed at the university and its research institutes to the commercial sector. As this committee is aware, land-grant academic institutions such as the University of Hawaii play a major role in developing and sustaining a local high tech industry and promoting the policies of a tech-based economy.

The Board and the staff very much welcome his appointment and encourage your favorable vote on his behalf.

Statement of

GREGORY R. KIM

Partner, Virtual Law Partners LLC

before the

Senate Committee on Economic Development and Technology

Wednesday April 15, 2009

1:15 p.m.

State Capitol, Conference Room 016

**Submitting for consideration and confirmation to the
Board of Directors of the High Technology Development Corporation,
Gubernatorial Nominee, Song K. Choi, for a term to expire 6-30-2013**

I am a corporate attorney with 25 year's experience, and focus on the representation of startup and emerging growth companies in Hawaii. I have known Professor Song K. Choi professionally and personally since early 2001, when I helped organize his startup company, M.A.S.E., Inc. ("MASE").

Professor Choi would be an excellent member of HTDC. He has a unique blend of academics, as the Associate Dean for the School of Engineering at UH, and an entrepreneurial spirit, as the founder and CEO of MASE. MASE is in the process of commercializing semi-autonomous underwater vehicle technology developed by Professor Choi and his team at UH, and is one of the few recent spinout companies from UH.

What makes Professor Choi extremely unique and valuable to HTDC is that he understands two different but important worlds relating to the technology segment – the world of academics, where he has been extremely accomplished and successful, and the world of entrepreneurship, where he has shown the tenacity and agility to be a successful entrepreneur and get MASE off the ground and spun out of UH, no easy task. Professor Choi would bring those qualities to help HTDC navigate the opportunities and challenges at UH, as well as build the entrepreneurship spirit and spinout at UH.

I enthusiastically support Professor Choi's nomination to the HTDC Board.

fukunaga4 - Michelle

From: mailinglist@capitol.hawaii.gov
Sent: Wednesday, April 15, 2009 1:55 AM
To: EDTTestimony
Cc: bennettevangelista@gmail.com
Subject: Testimony for GM573 on 4/15/2009 1:15:00 PM

Testimony for EDT 4/15/2009 1:15:00 PM GM573

Conference room: 016
Testifier position: support
Testifier will be present: No
Submitted by: Bennette Misalucha Evangelista
Organization: Individual
Address: 96-2009 h Kaahumanu Street Honolulu, Hawaii 96701
Phone: (808)398-5988
E-mail: bennettevangelista@gmail.com
Submitted on: 4/15/2009

Comments: