

THE UNIVERSITY OF TENNESSEE
BOARD OF TRUSTEES

MINUTES OF THE
RESEARCH, OUTREACH, AND ECONOMIC DEVELOPMENT COMMITTEE

March 28, 2017

Chattanooga, Tennessee

The Research, Outreach, and Economic Development Committee of the Board of Trustees of The University of Tennessee met at 1:00 p.m. EDT, Tuesday, March 28, 2017, in the Tennessee Room of the University Center on the UT Chattanooga campus in Chattanooga, Tennessee.

I. CALL TO ORDER

Dr. William E. Evans, Committee Chair, called the meeting to order.

II. ROLL CALL

Chair Evans asked Dr. Stacey Patterson, Associate Vice President for Research, to call the roll. The following members of the Research, Outreach, and Economic Development Committee were present:

William E. Evans, Chair
George E. Cates
Tim L. Cross
Susan C. Davidson
Joseph A. DiPietro
Raja J. Jubran
Margaret A. Norris
Jefferson S. Rogers
Rhedona Rose
Miranda N. Rutan
David A. Shepard
Rachel M. Smith

Mike Krause, Candice McQueen, Jai Templeton, and David M. Stern were not present at the meeting. Dr. Patterson announced the presence of a quorum of

the Committee. Other Trustees, members of the administrative staff and the public and representatives of the media were also present.

III. MINUTES OF LAST MEETING

Chair Evans asked for any corrections to the minutes of the June 22, 2016 meeting of the Committee. Hearing none, the Chair called for a motion to approve the minutes as written. The motion was made, seconded, and carried unanimously.

IV. 2017 NEWS AND HIGHLIGHTS

Dr. Patterson gave a brief report highlighting recent events (Exhibit 1). Thom Mason, Director of ORNL, will become the Executive Vice President for Laboratory Operations for Battelle Memorial Institute in Columbus, Ohio on July 1, 2017, exactly ten years after he arrived at ORNL. UT-ORNL Governor's Chair, Dr. Yilu Liu, was named to the 2016 Class of the National Academy of Inventors and was also inducted into the National Academy of Engineering this past year.

Dr. Patterson then introduced a video showcasing how those affected by the Gatlinburg wildfires in November 2016 are being helped by the UT Institute of Agriculture. Highlights included an interview with 4-H agent Glen Turner, who helped coordinate a gift card collection totaling more than \$60,000, and employees of the extension office made care bags for students and teachers at Sevier County Schools affected by the fires. Two of the fatalities were 4-H members. At the Pigeon Forge library, consumer experts helped residents who lost documents in the fire, such as birth certificates and social security cards, to secure replacements. The College of Veterinary Medicine also helped with 22 animals injured in the fires including Topper the Cat and Charles the Pig. Dr. Patterson thanked Chancellor Tim Cross and the UTIA for the work they do across the state and its positive impact.

V. UTC PRESENTATION ON SMART CITIES

Dr. Patterson introduced Dr. Reinhold Mann, Interim Director for the UTC SimCenter. Dr. Mann gave an overview of the SimCenter revitalization and organization (Exhibit 2). The SimCenter is a research and development program in modeling simulation high performance computing and has a strong education component that intersects with the Ph.D. program in Computational Science at UTC. The Director search is approaching the final stage and finalists will come to campus in the next three weeks to interview. The organizational structure is such that the Director is assisted by a Board of Directors consisting of the four deans of the colleges at UTC and the Vice Chancellor for Research. The objective of this structure is to ensure the SimCenter is well-integrated and meets expectations across the

University. In the preliminary strategic plan, five application domains with the same characteristics are laid out— aerospace, energy and environment, health and biosystems, manufacturing, and urban science and technology.

Dr. Mann introduced Dr. Mina Sartipi, UC Foundation Professor of Computer Science, who was recently elected by her peers as a senior member of the Institute of Electronic and Electrical Engineers. Dr. Sartipi described the exciting work of her group— Urban Science and Technology, also known as Smart Cities (included in Exhibit 2). She explained how Chattanooga, a growing mid-size city, has wisely used its resources to implement the fiber optic network offering 10-Gbps fiber internet service to all residents and businesses. This has uniquely positioned Chattanooga to support the testbed for next-generation Smart Cities. She explained how UTC is working to address the need for research and trained workers in these areas. The Urban Science and Technology application was born of this initiative. She said it is predicted that in 20-30 years, 80% of the population will be living in urban areas. The goal is to take advantage of smart technologies to improve the quality of life of citizens for the betterment of society. One of the current projects is determining how Chattanooga can be converted from a Gig City to a wireless Gig City to aid in gathering and generalizing data. Five areas of focus are smart transportation, individualized health care, energy efficiency, security, and critical infrastructures.

Trustee David Shepard asked whether the 10 gigabyte network has reached 100 percent of the area and if so, how long did it take and what was the cost. Dr. Sartipi responded that 100 percent has been in place less than a year, but she did not know the final cost.

Chair William Evans asked “What is your forecast on the technologies you just described in terms of how quickly those come to fruition? In the next 5-10 years? Also, what other cities in the United States would be similar to what is happening here - being a smart city and being wired (or wireless)?” Dr. Sartipi said the timeline for each technology will be different. Some health technology is already developed and is currently being used and checked for accuracy. Transportation technology will be developed later due to its relationship with the infrastructure. The wireless aspect will be the bottleneck for many cities to implement. Currently, cities that are part of the smart-eco bed community are Phoenix, Austin, Albuquerque, Baltimore, and Portland.

Trustee Jefferson Rogers said he had the pleasure of having lunch with some students working with Dr. Sartipi and learned their work is also leading to some start-up firms in the Chattanooga area. With this as the basis, he asked if we will see a core expand rather rapidly in this area - will we become a southern Silicon Valley? Dr. Sartipi responded this is a possibility, stressing that Chattanooga has a strong entrepreneurship support program and offers workshops for the students.

VI. RESEARCH AND ACADEMIC EXCELLENCE AT UTSI

Dr. Mark Whorton, Executive Director of the UT Space Institute, presented a report on the UTSI (Exhibit 3). UTSI was established in 1964 as part of UT Knoxville. To date, 2,600 graduate degrees have been conferred, including over 260 Ph.D.s. The campus has world-class aerospace science and ground-test facilities for defense and space research, as well as deep ties to the space program. Ten astronauts are alumni of UT, 9 from UTSI and 1 from the Health Science Center. Two served as consecutive commanders on the International Space Station. Dr. Whorton emphasized the great opportunities to grow in aerospace and defense, noting UTSI's proximity to Arnold Air Force Base and Redstone Arsenal. He also referred to UTSI's world class test facilities, including a Mach 3 wind tunnel and a Mach 4 wind tunnel (one of the largest in academia) under development. UTSI is building four different areas of focus: (1) Integrated Aerospace Sciences and Testing - innovations in integrated systems engineering, aerospace sciences, and testing (aeronautical, space, automotive); (2) Hypersonics - enabling Middle Tennessee to be the national epicenter for hypersonic research and development; (3) Propulsion - advanced in-space propulsion, combustion instabilities, plume diagnostics; and (4) Advanced Materials - Center for Laser Applications (additive manufacturing for space and defense).

Trustee Charles Wharton offered the following comment and questions: "When you interviewed, one of the things you presented was a strategic plan for UTSI. Are you sticking to that plan? Is it working? Has it been embraced by your colleagues? Have you changed the focus of the students being recruited for UTSI?" Dr. Whorton explained how shortly after he arrived at UTSI, his senior leadership team embarked on a strategic planning activity with the intent not to build a glossy folder to put on a shelf but to evaluate where they were and where they needed to spend their resources. Through a series of events, the team participated in activities resulting in the four focus areas mentioned earlier for the next three to five years. A new organizational alignment has been built that matches the priorities. A position was created and filled by the chief technologist from the Air Force base, who will help shape UTSI research programs to meet the needs of the Air Force and defense. A director for the Center for Laser Applications has been hired, bringing to four the number of Fellows of the Institute of Aeronautics and Astronautics at UTSI, which is quite notable for a school its size. The goal is to increase the quality of the research and the academics by actively focusing on recruiting top-notch students in the four focus areas. It will be indicated by a shift of emphasis on the type of students recruited and the focus areas of their studies.

Trustee Wharton asked, "Has that shift begun at this time? Is it a challenge to bring students to this remote area?" Dr. Whorton replied that the shift is beginning, noting

that a group went to the Institute of Aeronautics and Astronautics regional student conference recently to recruit for the four focus areas. He acknowledged that remoteness of the area can be a challenge, and one of the objectives is to focus on the quality of life in the area. He added that the opportunity to interact with UTSI faculty, to participate and engage in research at the types of facilities UTSI offers, and to be a part of what UTSI will be doing in the near future is likely to draw the type of students UTSI is seeking.

Chair Evans asked, "How many total faculty/staff/students are there on your campus?" Dr. Whorton said there are 10 research faculty and 10 tenure-track faculty for a total of 20 faculty; 25 full-time students on campus and an additional 100-125 distance students. The goal is to have 1000 distance education students enrolled, 500 individuals coming to campus for short courses per year, and 50 full-time resident Ph.D. students in 5 years. He added that UTSI currently does not have housing capacity for 50 students but will work to achieve that goal. He acknowledged that the goals are ambitious, but he believes UTSI is up to the task. Dr. Whorton said UTSI has had hundreds of military test pilots come through its training program, and he believes it gave them a competitive advantage over their peers when they made it to the flight test school. They were set apart from day one in their flight school training program, and that manifested itself in their selection as astronauts. He believes there is a strong correlation and a causation associated with UTSI graduates being selected to be astronauts.

VII. IPS PRESENTATION

Dr. Herb Byrd, Vice President for the Institute for Public Service, presented some highlights of the Institute (Exhibit 4). He then introduced Jim Thomas, Executive Director of Municipal Technical Assistance Service (MTAS), and Don Green, Executive Director of Law Enforcement Innovation Center (LEIC), to give reports on their respective areas.

Mr. Thomas said MTAS is the oldest of five agencies in the Institute as a result of legislative action in 1949 directing MTAS to "furnish technical, consultative and field services to municipalities in any and all matters related to municipal government." MTAS carries out this mandate today in each of the state's 345 cities. The MTAS staff is used thousands of times each year when questions arise or proven best practices are needed. Most MTAS consultants served in local governments in their area of expertise prior to joining MTAS. He recognized committee member Margaret Norris as a MTAS consultant. He noted that MTAS frequently collaborates with Tennessee state government. As an example, he said the Certified Municipal Finance Officer program was created in collaboration with the Comptroller of the Treasury. An impact analysis of the program has been performed, and statistically the program has made a very positive impact. Comptroller Justin Wilson wholeheartedly

endorses the program and calls it a “game-changer.”

Turning to the Law Enforcement Innovation Center, Mr. Green said LEIC was formed in 1997 through grant funding to provide regional community police training. In 2000, it evolved through federal dollars to include homeland security and crime scene investigative training nationally. In 2013, LEIC was provided state funding to focus on the same level of training for Tennessee law enforcement. Progressing from relying primarily on federal dollars, LEIC has evolved to a blended funding model of approximately 40% state funding, 40% program fees, and only 20% federal dollars for its training outreach. The most widely known training program is the National Forensic Academy. It is a unique ten-week intensive residential crime scene investigative training that began through federal dollars and is now almost entirely funded through program fees. For those unable to attend in person, LEIC provides specific individual modules around the country at host agency sites. Using state of the art facilities, the LEIC National Forensic Academy program has also partnered with Dr. Bill Bass to assist in developing an outdoor forensic training center that mirrors his earlier work in Knoxville and is focused entirely on law enforcement training. This outdoor facility expands the capability to include increasing search and recovery, use of cadaver dogs, and use of detecting equipment in an isolated area. This new facility was created in partnership with the Institute of Agriculture. The commitment from the Tennessee Bureau of Investigation has been such that the Director has vowed all his agents will go through this training before he retires. Mr. Green explained the NFA Collegiate Program and the Leadership Classes were developed to provide law enforcement with appropriate training in order to supervise and lead agencies. In closing, Mr. Green added that LEIC helps spread the UT brand across the nation.

VIII. REPORT ON CHEROKEE FARM INNOVATION CAMPUS

Chair Evans directed the committee’s attention to the written report in the meeting materials providing an update of Cherokee Farm progress to date.

IX. OTHER BUSINESS

There was no other business to come before the Committee. Before adjournment, Vice Chair of the Board Raja Jubran asked Dr. Patterson to give a brief overview of the Governor’s Chair program. Dr. Patterson said the Governor’s Chair Program was created in 2006 by former Governor Bredesen with some recurring state funds that were to be matched by Oak Ridge National Laboratory (ORNL) to recruit the top faculty in the areas of research that were collaborative with ORNL. All but two of these joint faculty members are UT employees with 50% of their pay and other types of compensation coming from ORNL. There are currently 17 Governor’s Chairs, 14 at UT Knoxville, 1 at the UT Institute of Agriculture, and 2 at UT Health Science Center. These positions are in areas of energy research from nuclear to

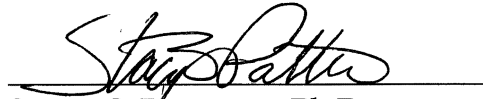
energy efficiency to computational modeling for new drug targets and design. Currently, the program is at capacity. The University requested additional state funding to hire additional Governor's Chairs but was not successful in that effort last year. This is an area of critical importance for growth in research. These faculty tend to generate multiples of funding versus other faculty in their department. Not only do they bring in funding of their own, these faculty are program builders and rainmakers who bring others in to do what they are doing. They are very collaborative and are critical to research growth and the type of faculty the University wants to recruit.

Vice Chair Jubran then asked whether there is any particular direction for expansion of the program. Dr. Patterson said the University has looked at target areas for high growth and has candidates in mind if funding becomes available.

X. ADJOURNMENT

There being no other business, the meeting was adjourned.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Stacey S. Patterson", written over a horizontal line.

Stacey S. Patterson, Ph.D.
Associate Vice President for Research