

IHMC Board of Directors Meeting Minutes  
Monday June 15, 2020  
8:30 a.m. CST/9:30 a.m. EST Meeting

Roll Call

Chair Bill Dalton

Chair's Greetings

Chair Bill Dalton

Action Items

- |    |  |                          |
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| 1. | Approval of March 9, 2020 Minutes              | Chair Bill Dalton        |
| 2. | Discussion of IHMC Financials                  | Chair Finance Dick Baker |
| 3. | Discussion and Action on 2020-21 Meeting Dates | Chair Bill Dalton        |

Chief Executive Officer's Report

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|----|--------------------------------------|--------------|
| 1. | COVID-19 and PPP Loan Update         | Dr. Ken Ford |
| 2. | Research Update                      | Dr. Ken Ford |
| 3. | State and Federal Legislative Update | Dr. Ken Ford |

Adjournment

IHMC Chair Bill Dalton called the meeting to order at 8:30 a.m. CST. Directors in attendance included: Dick Baker, Carol Carlan, Bill Dalton, Ron Ewers, Eugene Franklin, Hal Hudson, Jon Mills, Eric Nickelsen, Mort O'Sullivan, Jay Patel, Jim Reeves, Ray Russenberger, Martha Saunders and Gordon Sprague. Also, in attendance were Ken Ford, Ronnie Armstrong, Alan Ordway, and Julie Sheppard

Chair Dalton welcomed and thanked everyone who is here this morning both in person and to those who have dialed in. He thanked the Board for assisting IHMC with the Payroll Protection Program Loan (PPP Loan), and has informed the Directors that, the period of time for using the loan funding has been extended through December 31, 2020 and stated that IHMC will calendar an update on the use of these funds for the September meeting. We are currently spending the funds on allowable payroll and facilities expenses.

He continued on commenting that this morning, there are 3 items to discuss followed by Dr. Ford's report.

He introduced Action Item 1 asking for approval of the March 9, 2020 Minutes. Director O'Sullivan approved and it was seconded by Director Baker. Hearing no objections, the motion carried unanimously.

Chair Dalton then asked Director Baker to discuss Agenda Item 2, the IHMC Financials. Director Baker gave an in-depth discussion of the IHMC financials concluding his comments by stating that net assets were trending up, grant and contract revenue was up and general administrative expenses were down, a perfect picture. Director Reeves approved Director Baker's report and Director Carlan seconded. Hearing no discussion, the Board unanimously approved the financial update. Chair Dalton thanked Director Baker.

Chair Dalton then introduced Agenda Item Number 3, discussion and action on meeting dates for 2020-21 calendar year. Chair Dalton explained that hopefully, the Board would be able to meet in-person soon so we are proposing an in-person meeting on Sunday/Monday September 27 and 28, 2020 in Pensacola. He added that the following two meetings would be teleconference calls at 8:30 am CST and added that the proposed dates are Monday, December 14, 2020 and Monday, March 15, 2021. He concluded the year's schedule by proposing Sunday and Monday, June 13 and 14, 2021 for an in-person meeting in Pensacola. After hearing no objections to the proposed dates, Chair Dalton asked for a motion to approve the 2020-2021 proposed schedule of meetings. Director Baker moved approval followed by Director Reeves and the motion to approve the proposed schedule of Board meetings passed unanimously.

Chair Dalton then thanked the Board and asked Dr. Ford to provide his report.

Dr. Ford thanked Chair Dalton for the opportunity to provide his report and thanked the Board for their participation. He began his discussion by stating that he would be remiss if he did not provide an update on COVID 19 and its impact on IHMC Projects, Operations, and Current Continuing Outreach. He explained that IHMC has carefully monitored COVID 19 developments as they impact our current and pending project work, our administration and facilities, and the IHMC educational outreach programs including the IHMC Evening Lecture Series, Science Saturdays, and our Robotics Camps, informing the Board that IHMC has responded to each new development with best practices. He stated that on March 10, 2020, IHMC began monitoring COVID 19 evolution nationwide and we reminded all IHMC employees of IHMC's generous leave policy for sick leave or caring for a sick family member, and provided all applicable health insurance benefits and contact information. He explained that we then offered that if an employee had concerns about the work environment, they could contact their supervisor on a schedule to work from home, and IHMC IT employees would ensure they had the proper information technology and infrastructure support. He added that employees remaining on premises were instructed to take extra precautions including frequent hand cleaning and that IHMC had stocked up on necessary products to ensure a healthy work environment. He explained that employees with travel requirements were asked to follow the latest CDC's Traveler's Health Notices and several events such as the Zurich Cybathlon and other large gatherings having been postponed or cancelled and that IHMC has begun pursuing refunds or credits for cancelled travel expenditures.

He continued by stating that in mid-March, IHMC determined that it is in the best interests of our attendees and the communities in which we all live, work and play to postpone the remainder of the spring season Evening Lectures and Science Saturday's sessions, and to cancel this year's Robotics Open House on April 9, 2020. He continued on stating that we reminded our adult audience that they would still be able to listen to IHMC Podcasts found at IHMC's STEM-Talk, featuring conversations with some of the most interesting people in the world of science and technology.

Additionally, Dr. Ford commented, about this same time, IHMC requested that employees work directly with supervisors on an at-home assignment if possible, and not to come into any IHMC building if experiencing fever or not feeling well. Continuing, Dr. Ford remarked that IHMC also cancelled all outside visitors and unnecessary meetings and asked that employees not bring children to work or invite non-employees into the buildings. He added that for everyone's safety and security, building doors were locked as well as gate access and that for those employees

concerned about using the finger print reader and door handles for entry, key cards were made available and sanitizing wipes were to be used before and after entering the buildings.

Dr. Ford explained that on April 1, 2020, Governor DeSantis issued Executive Order 20-91, Essential Services and Activities During COVID-19 Emergency, IHMC requested employees to work at home and employees were asked to discuss with supervisors any need to access IHMC buildings, and to not enter any IHMC building if not feeling well. He added that during this time, IHMC essential personnel would be checking both Pensacola and Ocala buildings and coordinating mail and package deliveries. Dr. Ford stated that by this time, IHMC had received positive feedback from many government agencies and that the Office of Management and Budget issued OMB Memo M-20-17, Administrative Relief for Recipients and Applicants of Federal Financial Assistance directly impacted by the Novel Coronavirus (COVID-19) due to loss of operations, providing agencies with additional flexibilities for grants. He informed the Board that the Office of Naval Research, our cognizant agency, offered automatic no cost extensions for many of their awards and that IHMC had other federal awards, i.e. with DARPA, ARL, AFRL, that also fell under the OMB Memo M-20-17. He explained that relief options for the agencies included among the following: a) No cost extensions of 12 months, and after extension, 90 to 120 days for final reports; b) An abbreviated request review process; c) Allowability of salaries and project activities; d) Allowing costs related to the cancellation of events or meeting; and e) Extension of closeout requirements for up to 1 year after award expires.

He continued explaining that IHMC quickly found that each agency varied on available options and scientists with pending projects were encouraged to stay in contact with their agency PMs for updates and possible supplemental funding and that some pending proposals would be implemented by adding funds to existing open projects. He stated that IHMC administration continued to process proposals and work on contract and grant management.

Dr. Ford then remarked that on May 4, 2020, when Governor DeSantis had issued Executive Order 20-112 Phase I Safe, Smart, Step by Step Plan for Florida's Recovery, IHMC reopened its doors to employees wishing to return to their offices and labs. He added that while still limiting visitors and non-employee groups, IHMC was staffed and running at all locations and that all buildings were, and continue to be, cleaned daily, with an employee rover to wipe areas on a regular basis throughout the day. He stated that those employees in private offices were welcomed to return to the office and resume normal hours adding that those with underlying health conditions or employees who had concerns about resuming normal operations were asked to work with their supervisor on continued at home assignments.

Dr. Ford concluded, stating that IHMC believes that we can safely accommodate employees in our IHMC work environments and employees have been reminded to remain respectful of other people's office space and use telephone or email contact where appropriate. He explained that interns starting this summer are managed in a way so as not to involve people congregating in open spaces. Continuing on, he added that as a result of the recent Governor's decision to allow groups of 50, IHMC recently announced the decision for in-person robotics camps at IHMC, but in order to allow a greater margin of safety, camp was been postponed until July and attendance has been limited. IHMC also purchased additional chrome books so that each camper would have a dedicated computer to use for the camp week and not be required to share with others. He commented that we know that everyone is hoping to get out of the house to interact with others,

and the Pensacola camps already have waiting lists and we expect the same result will happen in Ocala as well.

Dr. Ford remarked that several positive things have come out of the COVID experience, one being that with reduced people in the Pensacola and Ocala buildings we have taken the time to do some much needed maintenance. He remarked that in Pensacola, at 40 S. Alcaniz St., one might notice the pressure washing and painting that has been accomplished and the building has a new fresh look. This was a much-needed major project taking approximately 8 weeks and costing close to \$90,000. He explained that it was helpful to have very few cars at the facility and this allowed the crews to work more effectively. He commented that the Levin Center had the windows cleaned and stucco repaired. In Ocala, we have also used this time to do general cleaning inside and outside the facility as well as making some needed changes in landscaping and that an annual Ocala maintenance schedule has been developed and budgeted. He remarked that this will allow the Ocala facility to plan and schedule all necessary work in a timely fashion and that we are currently up to date on all general maintenance. Dr. Ford happily mentioned that the grinder pump has been installed and all surrounding work is completed. Also, all A/C piping work has been completed on the first floor and as a result, we have not had one drip of water downstairs through city construction and excessive rainfall and the look is much more presentable. He ended the facilities discussion by adding that all in all, everyone should notice the IHMC buildings all look just a little refreshed.

Dr. Ford then turned to funding and thanked the Board for helping IHMC receive the \$1.6 million PPP Loan adding that as many may know, we received the monies in mid-April and the eight-week period of usage ended this past Wednesday, June 10. He explained that currently there are some new options for extending this 8-week period which we are currently exploring and commenting that during these 8 weeks, IHMC utilized this funding to pay allowable mortgages and rents and payroll costs. He explained that this loan allowed us to relieve pressure on grants that could not be worked remotely. Thus, extending the time for completing the project and deliverables has also enabled us to fund a significant amount of time for our researchers and scientists to write and submit proposals and white papers to secure additional funding this coming year. He added that as one can imagine, COVID is a perfect disaster scenario for a contract and grant funded organization like IHMC and that many of our projects involve human subject testing which were delayed or halted, and many Broad Agency Announcements and other proposal submissions were extended or postponed. He remarked that to have a fund such as the PPP Loan to utilize for grant writing salary costs was a substantial benefit.

Continuing his discussion, Dr. Ford commented that the State of Florida revenue stream has also been impacted severely which could threaten our state appropriations, and continuing expenditures on grants without being able to perform work creates issues with deliverables. He added that he would like to also personally thank both Directors Jim Reeves and Carol Carlan who reached out to the Governor's office to support our appropriation this year. He remarked that, all in all, it has been a perfect COVID related storm and the use of the PPP Loan has significantly helped as you will see from the following update. He explained that he was also happy to inform the Board that IHMC did not lay off any employees.

Continuing, Dr. Ford stated that as a risk mitigation strategy associated with COVID-19, as he had previously mentioned, much of IHMC's time and effort this spring has been focused on ensuring long term success via significant time allocation put toward proposal and white paper submissions.

He remarked that since our last meeting, IHMC has submitted over 26 proposals and whitepapers worth over \$50 million.

Specifically, Dr. Ford remarked that Dr. Bonnie Dorr and the Ocala team has spearheaded a handful of other white papers with IHMC as prime, and one MURI proposal as a subcontract to RPI. He stated that Dr. Robert Griffin has been awarded funding from Army Research Lab to develop a Mission-based Traversability Assessment (MeTA) tool, that will enable unmanned systems to reason about increasingly complex context when developing their individual navigation plans. Unmanned systems will require more context than mere occupancy to make sound navigation decisions when engaged in fully autonomous maneuver. He explained that the MeTA tool will be a framework for developing a variety of layers of pertinent context necessary for making informed decisions during maneuver operations.

Adding to his discussion on funding, Dr. Ford stated that Dr. Peter Pirolli has received an NSF award titled “RAPID: Improving Computational Epidemiology with Higher Fidelity Models of Human Behavior”. He explained that guidance on strategic response options to the COVID-19 pandemic has been greatly influenced in the U.S. and elsewhere by predictive epidemiological models. This new funding will enable the first phase in a multi-phase research effort on agent-based epidemiological models that include multi-level cognitive and social simulation. He explained that this first phase of effort will concentrate on Psychologically Valid Agents that can simulate individuals with a range of attitudes, beliefs, and credibility assessments that determine their intentions and decisions in response to Non-pharmaceutical interventions (e.g., to shelter-in-place vs go to the beach). He added that current epidemiological models are not based on high-fidelity, scientifically established computational models of human psychology and behavior change and this means that current forecasts have an abundance of very large uncertainties around psychological and behavior responses to NPIs. He remarked that this project will assist in developing Psychologically Valid Agents (PVA), each representing a simulated individual, and populations of PVAs simulating the human population of a given region (e.g., a county or state) and that these PVAs will eventually be part of a new kind of epidemiological model for forecasting COVID-19 cases. He commented that this effort is led by Peter Pirolli and also includes Dr. Archana Bhatia in the Ocala office with two subcontracts to CMU and UVA.

Ford also mentioned that Robert Griffin has a pending \$2 million contract expected to be awarded very soon which involves collaborating with Sandia National Laboratories titled “Wearable Robotics to Enhance Worker Safety”. He explained that this work aims to address the middle to long term ergonomic and safety challenges that face Department of Energy – Environmental Management workers and the work will aim for the development of systems that directly address Personal Protective Equipment deficiencies and create systems uniquely suited to the needs of EM workers. He added, that by providing wearable robotic assistive devices to the workforce, the weight of this heavy equipment and PPE can be offloaded from the user, allowing workers to spend more time in the field, work more productively, and experience reduced physical exhaustion risk of long-term musculoskeletal injuries.

Dr. Ford also commented that Jerry Pratt is awaiting an award from NASA on a project titled “Advanced Mobility Algorithms” for NASA JSC Valkyrie Robots and he explained that as part of this effort, IHMC will research and develop control and planning algorithms for improved humanoid mobility and manipulation for the NASA JSC Valkyrie second generation humanoid

robot and maintain and support active effort on the NASA JSC Valkyrie first generation humanoid robot.

Moving along, Dr. Ford announced that Dr. Jeffrey Phillips spearheaded a white paper, with IHMC as prime, in the realm of early diagnostics for COVID-19. He added that this IHMC COVID-19 Smartphone App proposal, was submitted to Medical Technology Enterprise Consortium (MTEC) adding that MTEC is a biomedical technology consortium under an agreement with US Army Research Development Command. In this proposal, IHMC scientists would develop a breath and speech processing system, that will significantly improve the early diagnosis of COVID-19 and patient monitoring in a simple, inexpensive smartphone application explaining that COVID-19 symptomology and severity would be detected through the analysis of respiration rate, (abnormal) breathing sounds, and speech over a smartphone application and unobtrusive microphone. He remarked that this effort includes Jeff Phillips, Archana Bhatia, Bonnie Dorr, Ian Perera, Arash Mahyari, Anil Raj, Eddie Behout, and David Fries.

Dr. Ford also informed the Board that Dr. Peter Pirolli has developed an additional white paper related to COVID-19, with IHMC as prime: IHMC's Pathological Intelligence for Tracking Transmission (PITT), was submitted to IARPA proposes an innovative computational approach to forecast the dynamics of individual-level attitudes and behavior in response to non-pharmaceutical interventions and associated ecosystem of information and disinformation, with a focus on predicting behavior and attitudes that are assumed to influence disease transmission. He explained that there are two challenges: 1) the need for accurate, computational, psychologically valid models to forecast the impact of non-pharmaceutical interventions on behavior; 2) the need for models that offer mechanistic explanation for the dynamics of attitudes and behavior in response to messaging and (dis)information from various sources including social media. He added that this effort includes Peter Pirolli, Bonnie Dorr, Adam Dalton, Tomek Strzalkowski and additional scientists from UVA and CMU.

Dr. Ford also mentioned that just this past Friday, a team of researchers led by Tim Broderick, submitted a proposal to ONR titled, "Evaluating Potential Benefits of Intranasal Oxytocin" on Undersea Operator Training and Performance. He explained that Naval Special Warfare operators are exposed to a variety of extreme environmental conditions and intense physical demands and that in addition to breathing high pressure gases at depth, prolonged cold-water immersion and inadequate recovery from sustained physical exertion, negatively impact individual and team performance. He added that biotechnologies that could mitigate the effects of a cold as well as support physical recovery represent a significant unmet need for the SEAL operational community. He commented that oxytocin has a wide range of actions both locally in the brain and peripherally in the body including skeletal muscle and these peripheral effects can be mediated by classic ligand-receptor activation given the abundant expression of the oxytocin receptor in peripheral tissues, along with local expression of OT in peripheral tissues where it is likely to act in an autocrine manner. He remarked that exogenous OT via intranasal administration is FDA Investigational New Drug (IND) approved and has been demonstrated as an easy and safe method to increase circulating OT concentrations that may augment actions on peripheral tissues. Dr. Ford explained that due to the pleiotropic effects of OT on whole body metabolism including thermogenesis, pain, mood, inflammation, appetite, glycemic control, skeletal homeostasis, and skeletal muscle repair and regeneration, there is increasing interest in the administration of exogenous OT for benefits to human health, performance and resilience.

He added that IHMC will be investigating two possible applications of OT for the SEAL community: the first for Exercise-Induced Muscle Damage and Recovery stating that the biological mechanisms by which OT exerts effects on skeletal muscle remain poorly understood, particularly in humans. He explained that this project is designed to advance this understanding while testing the hypothesis that intranasally administered OT enhances skeletal muscle regenerative capacity and therefore recovery from intense, muscle damage-inducing exercise. He commented that if efficacy is demonstrated, the deliverable is an easily administered, adjunctive biological therapy expected to improve recovery, performance, and resilience of warfighters. The second application he stated is Cold Water Task Performance and Recover adding that given the potential thermogenic and recovery effects of intranasal OT, we hypothesize that prophylactic OT administration, compared to placebo, will mitigate deficits in mission-relevant performance during and after cold water exposure. He explained for this project, we will utilize a Cold-Water Performance Task Battery that has been validated with the operator community for its ability to induce changes in core and peripheral body temperature, manual dexterity, cognitive performance, and physical performance following cold water exposure. He concluded by stating that our hypothesis will be tested using a rigorous, double-blind, placebo-controlled, within-subjects randomized cross-over trial comparing 48 subjects receiving OT vs placebo in cold water performance and recovery. He stated that this project will be conducted by an excellent multi-institutional team of investigators including Tim Broderick, Marcas Bamman, Dawn Kernagis, Ken Ford, Todd Norell, and more junior research associates at IHMC. The University of Florida, UAB and TGEN will be the primary subcontractors with the budget at roughly \$3.4M.

Dr. Ford then announced that IHMC is expanding its research in the Human Performance and Resilience sector, recruiting Dr. Marcas Bamman, a renowned scientist who in 2019 was ranked #3 of 821 scientists working in Anatomy/Cell Biology. He informed the Board that Dr. Bamman is internationally recognized for his scientific contributions to the biology of human skeletal muscle and medical rehabilitation adding that his primary research focuses on dose optimization in medical rehabilitation clinical trials and on molecular mechanisms underpinning inter-individual response heterogeneity. He continued on by stating that Marcas is a University of Alabama, Birmingham Professor in the Departments of Cell Development & Integrative Biology; Medicine and Neurology and the Director of the UAB Center for Exercise Medicine. He continued by mentioning that his interdisciplinary, translational research program involves co-investigators from Geriatric Medicine, Cardiology, Surgery, Physical Therapy, and Physiology and Biophysics. Dr. Ford continued his discussion by adding that he cannot begin to describe how delighted IHMC is to have Marcas join IHMC this September and that he thinks that all of the Board members will enjoy meeting him. He added that hiring a star like Marcas will allow IHMC to expand the cluster in human performance and resilience that began several years ago with the hires of Drs. Dawn Kernagis, Jeff Phillips, and Peter Pirollo and adding Dr. Tim Borderick this past year. He added that everyone may recall we are building a significant research acclaim in this area and have greatly expanded our team so much that it has become a third leg of IHMC Research to compliment our AI group and our Robotics groups.

Dr. Ford continued his discussion by mentioning that we are working on a proposal for the TRIUMPH fund to ask for programming and equipment funding to assist us with further developing this human performance group and address some of the costs of specialized laboratory equipment to allow Dr. Bamman to transfer several of his grants and bring some of his exceptional team members to Pensacola. He added that the Board will be hearing more about our upcoming TRIUMPH proposal at the September meeting and hopefully meeting Marcas.

Dr. Ford continued his discussion stating that another new IHMC recent hire is Dr. Toshiya Miyatsu. He informed the Board that Toshi earned his Ph.D. and M.A. in Psychological and Brain Sciences from Washington University in St. Louis adding that his interest is enhancing the learning and instruction of cognitive and physical skills through incorporating technological and cognitive tools. Dr. Ford mentioned that Toshiya is working with IHMC Drs. Peter Pirolli and Timothy Broderick on the LEAP (Learning through Electrical Augmentation) and PEERLESS (Operator Biological Aptitude) projects.

Dr. Ford also announced another new hire is Trey Pfeiffer who has been hired as a Research Associate working with Matt Johnson and the drone development team. He mentioned that Trey is a multi-rotor hardware engineer, and for the past five years has been building and maintaining custom multi-rotors for drone racing, and drone photography and videography adding that Trey also manages Pensacola FPV Racers, providing drone races and STEM events for the local community.

Dr. Ford also discussed that it is that time of year when we bring students in and although we have been selective this year in trying to not have too many people at the facility, it is also important that young people have an opportunity to spend time in research and further their educational mission. He added that this summer's interns range from undergraduates to PhD students and hail from a wide range of institutions, including the University of Michigan, Georgia Tech, Rochester Institute of Technology, Texas A&M, University of Southern California, Olin College of Engineering, Smith College, University of Mississippi Medical Center, Worcester Polytechnic Institute, University of Florida, and the University of West Florida. He stated that this group represents a fine group of young people and we are happy to provide a research opportunity this summer as so many students had their summer plans deferred or cancelled due to the Pandemic. He added that we hope as usual to expose them to the many interdisciplinary aspects of IHMC through several employee events, afternoon lectures and other IHMC social experiences.

Dr. Ford then informed the Board that the Defense Advanced Research Projects Agency (DARPA) has named Dr. Bonnie Dorr of IHMC to its Information Science and Technology (ISAT) Study Group for a three-year term. He stated that this appointment recognizes Bonnie's outstanding reputation as a researcher in the field of natural language processing adding that this ISAT Study Group brings together 30 scientists and engineers from across the country who provide continuing and independent assessments of the state of advanced information science and technology as it relates to the U.S. Department of Defense. He asked the Board to join him in congratulating Bonnie on this distinct honor.

Dr. Ford then provided an update on the joint UWF-IHMC PhD program in Intelligent Systems and Robotics stating that this program is exceeding the expectations in terms of enrollment adding that the applicant selection committee has been busy and will be extending offers to five more students for a fall start ... bringing the number in the program to 12. He added that the Board may recall the original goal was to accommodate 20 students in 5 years and we are at 12 in year 2 which demonstrates the demand for this type of program. He concluded by stating that we are pleased with the program reception and execution to date.

Dr. Ford then thanked Chair Dalton for the chance to update the Board on all of the IHMC activities and offered to answer any questions.



Dr. Dalton thanked Dr. Ford for another excellent report and asked the Board if they had any questions or discussion items. Hearing no questions, he informed the Board the next Board meeting is scheduled for dinner Sunday evening, September 27 followed by a half day meeting Monday, September 28 in Pensacola adding that we will be in touch with details on dinner locations and accommodations for our out of town Board members as we get closer.

Dr. Dalton then thanked the Board for their participation and added his wishes for everyone to stay healthy and adjourned the meeting.

The Board meeting concluded at 9:27 am.

Respectfully submitted,

Julie Sheppard  
Corporate Secretary