Advancing the Global Land Grant Institution: Creating a Virtual Environment to Re-envision Extension and Advance GSS-related Research, Education, and Collaboration

May 15, 2017

Faculty Lead

Ralph Hall, Associate Professor, Director of the Undergraduate Program, School of Public and International Affairs, CAUS

GIS/Data Visualization/Data Architecture/Data Analytics/Information Systems

Nicholas Polys, Director of Visual Computing, Affiliate Professor in the Department Computer Science, COE
Peter Sforza, Director of the Center for Geospatial Information Technology, CNRE
Stephen Eubank, Deputy Director and Professor in NDSSL, the Biocomplexity Institute, Population Health Sciences, and Vet Med; Adjunct Professor, Department of Physics
Bryan Lewis, Research Associate Professor, the Biocomplexity Institute

Water Systems/Hydrogeoscience

Leigh-Anne H. Krometis, Assistant Professor, Department of Biological Systems Engineering, COE
Ryan Pollyea, Assistant Professor, Department of Geosciences, COS
Stephen Schoenholz, Director, Virginia Water Resources Research Center, CNRE
Venkataramana Sridhar, Assistant Professor, Department of Biological Systems Engineering, COE

Program Support/Gender and Development

Van Crowder, Executive Director of OIRED
John Lipsey, Associate Director, Strategic Partnerships and Program Development
Maria Elisa Christie, Director, Women and Gender in International Development

Learning in Virtual Environments

George Glasson, Professor, Science Education, School of Education, CLAHS
Hannah Scherer, Assistant Professor and Extension Specialist, Department of Agricultural, Leadership, and Community Education, CALS

Mzuzu University Library Design

Jack Davis, Dean, CAUS
Robert Dunay, ACSA Distinguished Professor, FAIA Director, Center for Design Research, CAUS
Nathan King, Assistant Professor, School of Architecture + Design, CAUS

Community Health and Disease Systems

Andre Muelenaer, Chief, Section of Pediatric Pulmonology/Allergy, Carilion Children's Hospital, Associate Professor, Department of Pediatrics Virginia Tech Carilion School of Medicine
Penelope Muelenaer, Assistant Professor, Pediatrics, Virginia Tech Carilion School of Medicine
Cassidy Rist, Assistant Professor, Center for Public and Corporate Veterinary Medicine, Department of Population Veterinary Medicine, VA-MD CVM
Sophie Wenzel, Associate Director, Center for Public Health Practice and Research, Department of Population Health Sciences, VA-MD CVM
1. Vision

The vision for this project has emerged from several years of research, teaching, and service in Africa and holds the potential to internationalize education at Virginia Tech and in our partner institutions in Malawi. The vision is simple, to develop a state-of-the-art, data rich, virtual decision-support and learning environment that enables local-, regional-, and national-level actors in developed and developing regions to make decisions that improve resilience and sustainability. Achieving these objectives will require a system that can combine biogeophysical and sociocultural data in a way that enables actors to understand and leverage these data to enhance decision-making at various levels. The project will begin by focusing on water, agricultural, and health systems in Malawi, and can be expanded over time to include any sector or system in any country. The core ideas are inherently scalable.

With the emergence of remote monitoring, precision agriculture, access to expanded wireless data transmission, use of –omics (plant/microbial) and computer vision, etc., we have reached a critical point where technology-enabled innovation can help support decision-making for resilient and sustainable ecosystems and the communities they support. Tapping into this opportunity requires interdisciplinary (global) teams of scientists and educators with complementary expertise and common goals to create appropriate technologies and systems that can provide essential information to local-, regional-, and national-level actors in resource rich and poor settings. Technology is now reaching a point where the digital divide is becoming less of a barrier and strong, long-term partnerships among educational institutions can be formed around the creation of common platforms that enhance decision-making and the internationalization of learning.

This proposal outlines the concept for an ambitious research, education, and extension agenda that brings together significant advances occurring at Virginia Tech in the areas of water modeling and simulation, water systems management, data analytics and visualization, modeling using synthetic global populations, virtual environments and immersive education, community health, and disease detection and response. The initial concept for the project was first explored in Burkina Faso in 2015 with support of an ISCE grant. This research was followed by an ICAT SEAD grant to demonstrate data capture and Web3D visualization capabilities. The fieldwork in Burkina Faso revealed the critical need for an open access map-based system/service that can be used by actors at different levels to improve rural water decision-making. This idea attracted much interest from a diverse set of stakeholders because existing rural water data is not easily accessible, useful for decision making, or shared between NGOs and the government. Over the past two years the core team has continued to refine these ideas in northern Malawi and has expanded the scope of the project to include the synergistic areas of agricultural and health systems, along with a new focus on virtual learning enabled by the future design and construction of a new library at Mzuzu University in northern Malawi.

2. Relevance

Our vision is to create a next-generation open data fusion platform that will enable multidisciplinary scientists, decision-makers, development actors, and citizens to understand and leverage the potential of sensor-driven information and visual analytic and decision-support services. The platform targets the power of Web accessibility, open standards, and immersive media to integrate and communicate the interactions between complex, dynamic systems. The core team (along with new hires at the interface of targeted disciplines - see Appendix III) will develop the cyberinfrastructure for several innovations that include (1) the ingesting of data from online and government sources, field-stations, drones, citizens, development actors, communities, simulation models, etc., (2) the fusing and processing of these data through Models-as-a-Service (MaaS), and (3) the creation of Web3D interfaces designed for testing hypotheses and scenarios to enhance decision-making at various levels (community to national/international) (Figure 1).
This platform would also create a virtual learning space where students and faculty at Virginia Tech and at our international partner institution(s) would create hybridized knowledge in the pursuit of solutions to problems that stem from the global to community scale. For example, groundwater resource management is particularly well-suited for the proposed multi-scale data fusion platform because (1) groundwater is the primary freshwater source for many rural communities in east Africa, (2) groundwater occurrence is highly uncertain and cannot be directly visualized, and (3) aquifer recharge processes occur over a wide range of spatial and temporal scales, which results in complex decision making for aquifer management. In addition, a number of rich data sets presently exist for regional-scale hydrological attributes in east Africa (e.g., MASDAP); however, utilizing such data for community-scale water supply management and decision making requires further analysis and additional data acquisition at local scales. At these scales, data acquisition may comprise any combination of crowdsourcing, advanced sensor deployment, and/or individual actors, and integrating such data in a Groundwater MaaS (gMaaS) may yield near real-time aquifer resource estimates. Moreover, combining gMaaS with interactive, Web3D visualization technology holds tremendous potential for testing the effects of various aquifer management strategies, as well as projecting these impacts through integrated MaaS systems in the food, energy, and economic sectors.

The advanced geospatial and analytic components of the envisioned platform will be supported by the Center for Geospatial Information Technology (CGIT), the Visualization Services offered by Virginia Tech’s Advanced Research Computing (ARC), and the Network Dynamics and Simulation Science Laboratory (NDSSL). The majority of the visualization components of the platform already exist in facilities such as the Visionarium, Mirror Words, the ICAT Cube, and the planned visualization classrooms, which are linked with the Data Analytics and Decision Sciences (DADS) Destination Area (DA). Our vision is to leverage these resources to secure funding that will support the development and application of the platform to critical global problems. With regards to the former, significant funding opportunities exist through the NSF INFEWS, CNH, CIRCL, and IUSE programs. With regards to the latter, funding can be sought from the U.S Government's Feed the Future program and Innovation Labs, development programs led by the United States Agency for International Development, the Global Health Security Agenda, the Department of State’s Community Solutions Program, the Bill & Melinda Gates Foundation, the World Bank’s African Centers of Excellence program (for partner funding), the Ford Foundation (in relation to equitable development), the Rockefeller Foundation (specifically with regards to freshwater resilience), and many other international development-related resources.

The proposed project would have direct links with the DADS and Integrated Security (IS) DAs, the Policy (P) and Creative Technologies and Experiences (CT+E) Strategic Growth Areas (SGAs), and the Beyond Boundaries Global Land Grant and Campus of the Future initiatives.

3. Curriculum and Global Learning

A unique aspect of this project is the future construction of a new library at Mzuzu University, which was lost to a fire in December 2015. Since the fire, faculty, staff, and students at Virginia Tech have led the Mzuni Library Initiative, which shipped over 8,000 books to Mzuzu in 2017. Faculty in the School of Architecture + Design will now begin the process of designing the concept for a new library, one that is the embodiment and identity of technology and tradition. A programmatic feature of the new facility will be a data and virtual learning center that will directly connect with research and facilities at Virginia Tech.

Currently, only one fifth of undergraduate students at Virginia Tech have the opportunity to undertake a study abroad program and only a handful of students at Mzuzu University study overseas. A core aspect of this project would be to enable students at Virginia Tech and (initially) at Mzuzu University, to work and learn together in a virtual international environment (Figure 2). For example, students at Mzuzu University could explore Stroubles Creek and students at Virginia Tech could explore a virtual version of the Freedom Gardens in Malawi. Such an environment would also enable the formation of hybridized knowledge through
the integration of Western and African knowledge. A goal of this project is to provide students at Virginia Tech and Mzuzu University with meaningful international engagement that stimulates curiosity through harnessing the tension between reality and abstraction. In collaboration with faculty from a variety of disciplines, students will be engaged in problem-based learning by analyzing, modeling, and interpreting data in virtual reality for the purpose of learning about ecosystems that support sustainable agriculture and communities. Decision-making and learning would involve a hybridized approach in which Indigenous and Western scientific knowledge systems, technologies, and practices are negotiated to find viable solutions to local issues that have global impact. The collaboration between faculty and students from Virginia Tech, Mzuzu University, and other Malawian Institutions (e.g., Lilongwe University of Agriculture and Natural Resources, University of Malawi) would significantly enhance cultural understandings and innovative approaches to problem-solving that underpin the global land grant mission.

This project represents a unique opportunity to develop new knowledge about the affordances that an international virtual learning space can provide to support student learning about complex, real-world systems, and the development of systems thinking abilities. Through a design-based education research strategy, resources such as customizable student project templates, faculty training materials, and strategies for incorporating a virtual problem-based learning unit into a course can be developed and tested as this project unfolds. These products would allow for faculty in a wide range of disciplines (at Virginia Tech and in our partner institutions in Malawi) to implement virtual international experiences to enhance existing and new courses.

4. Resource Needs

The faculty hires will work at the interface of critical project components and disciplines. These faculty will need to demonstrate expertise in two or more disciplines that span the interface identified. Appendix III provides an outline of eight critical faculty positions across six colleges that would advance the proposed project.

With regards to critical infrastructure, the new hires will need to have access to one or more of the following facilities: the Visionarium, Mirror Words, the ICAT Cube, and the planned visualization classrooms (linked with the DADS DA). As the project advances, a “decision theater” could greatly enhance the planning- and policy-related decision-making aspect of this project, while also providing a valuable service to other programs and researchers at Virginia Tech and in the local community. Table 1 provides a preliminary budget that would be further refined if awarded the grant.

Table 1: Budget

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<td>Travel - VT faculty to Malawi</td>
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<tr>
<td>Travel - Malawian partners to VT</td>
<td>$22,500</td>
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<tr>
<td>Faculty salary support (summer or AY)</td>
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<tr>
<td>Workshops/meetings (at VT)</td>
<td>$5,000</td>
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<tr>
<td>Equipment (to support proof-of-concept work)</td>
<td>$5,000</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>$75,000</strong></td>
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</tbody>
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Appendix I: Biosketches
Ralph P. Hall, MEng, S.M., S.M., PhD
Associate Professor, Urban Affairs and Planning, School of Public and International Affairs, Virginia Tech, http://ralphphall.wordpress.com/

Professional Preparation
Stanford University, California Civil & Environmental Engineering Postdoc 2008
MIT, Massachusetts Technology, Management, & Policy PhD 2006
MIT, Massachusetts Technology & Policy S.M. 2002
MIT, Massachusetts Civil & Environmental Engineering S.M. 2002
University of Southampton, England Civil Engineering MEng 1999

Recent Appointments
2016-pr. Associate Professor, Urban Affairs and Planning, VT
2015-pr. SPIA Undergraduate Program Director, VT
2013-pr. Affiliate Scholar, Global Forum on Urban and Regional Resilience, VT
2013-pr. Affiliate Member, Myers-Lawson School of Construction, VT
2011-pr. Faculty Fellow, Metropolitan Institute, VT
2009-2016 Assistant Professor, Urban Affairs and Planning, VT
2006-2008 Postdoctoral Scholar, Civil & Environmental Engineering, Stanford

Five Related Publications

Other Closely Related Publication
Synergistic Activities

Hall has over a decade of academic and professional experience in applying the concept of sustainable development to large-scale infrastructure systems with a specific emphasis on transportation, water supply, and sanitation systems. Hall’s most recent co-authored book, entitled *Sustainability in Transportation: Making it Count*, provides students and practitioners with a deep understanding of the basic concepts of sustainability as well as a coherent framework for how to apply them consistently in the context of transportation planning, management, and decision making at different levels.

1. **Sustainability-related Research**: PI of the Indian Institute of Technology-Kanpur (IIT-K) and Virginia Tech (VT) partnership on Sustainable and Resilient Infrastructure Development. The partnership was funded by the Obama-Singh 21st Century Knowledge Initiative.

2. **Professional Society Involvement**: Member of the Transportation Research Board (TRB) Committee on Transportation and Sustainability (ADD40); Member of TRB, 2002-present; Member of the Society of Socio-Economists, 2013-present.

3. **New Course Development (last 3 years)**: Advanced Urban Infrastructure Planning (undergraduate/graduate course); Experience WASH in Malawi – Study Abroad (undergraduate/graduate course); International Development Planning Studio (graduate course); and Technology, Globalization, and Sustainable Development (graduate course).


Collaborators & Other Affiliations

Collaborators & Co-Editors

Nicholas Ashford (MIT); Robert Ashford (Syracuse University); Jennifer Davis (Stanford University); Michael Garvin (Virginia Tech); Henrik Gudmundsson (Technical University of Denmark); Robert Hope (University of Oxford); Anne Khademian (Virginia Tech); Brian Kleiner (Virginia Tech); Greg Marsden (University of Leeds); Shalini Misra (Virginia Tech); Sudhir Misra (IITK); Nicolas Polys (Virginia Tech); Tara Ramani (Texas A&M University); Shyam Ranganathan (Virginia Tech); Peter Soderbaum (Mälardalen University); Peter Sforza (Virginia Tech); Venkataramana Sridhar (Virginia Tech); Eric Vance (Virginia Tech); Emily Van Houweling (University of Denver); Sophie Wenzel (Virginia Tech); Josias Zietsman (Texas A&M University).

Graduate and Postdoctoral Advisors

Nicholas Ashford (MIT); Joseph F. Coughlin (MIT); David Marks (MIT); Joseph M. Sussman (MIT)

Thesis Advisor and Postgraduate Scholar Sponsor

Jessica Agnew (Virginia Tech); Yehyun An (Virginia Tech); Selma Elouardighi (Virginia Tech); Mark Fialkoff (Virginia Tech); Khushboo Gupta (Virginia Tech); Raj Kumar (Virginia Tech); Emily Van Houweling (Virginia Tech)

Current: [a] Doctoral Students: 4 (committee chair/co-chair), 7 (committee member); [b] Masters Students: 1 (committee chair), 4 (committee member); [c] Undergraduate Students: 2.

Former: [a] Doctoral Students: 3 (committee chair), 4 (committee member); [b] Masters Students: 14 (committee chair), 32 (committee member); [c] Undergraduate Students: 4.
Maria Elisa Christie

DIRECTOR, WOMEN AND GENDER IN INTERNATIONAL DEVELOPMENT
526 Prices Fork Road | Blacksburg, VA 24061
Phone: 540-231-4297 | Email: mechristie@vt.edu

AFFILIATION: Virginia Tech

EXPERTISE: Gender, agriculture, and development; qualitative research methods; feminist political ecology; cultural ecology; house-lot gardens; geography of food, cuisine, and kitchenspace

EDUCATION: Ph.D., Geography, University of Texas at Austin
M.A., Spanish and Women’s Studies, University of Oregon
B.A., International Studies, History, and Romance Languages, University of Oregon

LANGUAGES: Spanish, English, French

COUNTRIES OF WORK EXPERIENCE: Bolivia, Bangladesh, Cambodia, Ecuador, Ghana, Haiti, Honduras, India, Indonesia, Kenya, Mali, Mexico, Nepal, Nicaragua, Philippines, Republic of Guinée, Senegal, Uganda, Vietnam, West Indies, and Zambia

EXPERIENCE SUMMARY:
Dr. Maria Elisa Christie has more than 25 years of experience in international development. Throughout her career, she has worked with a variety of development, research, and non-governmental agencies around the developing world, along with local, state, and federal governments in the United States and Mexico. Christie has played a key role in launching new projects that support international collaboration. Christie’s research focuses on gendered spaces and everyday life in nature/society relations, participatory research methodologies, kitchens and gardens, and women’s reciprocity networks. She has published a book, *Kitchenspace: Women, Fiestas, and Everyday Life in Central Mexico*, with the University of Texas Press. As the Director for Women and Gender in International Development (WGD), Christie’s primary role is to provide leadership within OIRED to ensure that all projects and programs are gender-sensitive and will have a positive effect on the most disadvantaged beneficiaries, many of whom are women. She has developed and facilitated workshops on gender and participatory research in the United States and in French-, Spanish-, and English-speaking countries.

EMPLOYMENT HIGHLIGHTS:
2006 – present Director, Women and Gender in International Development (Research Scientist), Office of International Research, Education and Development (OIRED), Virginia Tech

2006 – present Faculty Affiliate, Government and International Affairs Program, Women’s and Gender Studies, Geography Department at Virginia Tech

2003 – 2010 Assistant Professor and Lecturer of Geography, University of Indianapolis, University of Texas; Southwestern University

1994 – 1995  Coordinator, National and International Relations, Secretariat of Environmental Development, State Government of Morelos, Cuernavaca, Mexico


1988 – 1991  Administrator, Oxfam America Regional Office for Mexico and Central America, Mexico City

GRANTS:
USAD/Feed the Future Innovation Lab for Integrated Pest Management projects. Gender research component of the following projects: Biological Control of the Invasive Weed Parthenium hysterophorus in East Africa; Strengthening production and export of Vietnamese fruit crops through innovative and market-orientated IPM; and Innovative Scientific Research and Technology Transfer to Develop and Implement Integrated Pest Management Strategies for Vegetable and Mango Pests in Asia. $224,174 (2015 to present).


SELECTED PUBLICATIONS:


Resume

L. Van Crowder

Executive Director, Office of International Research, Education and Development (OIRED)
Professor, Department of Agricultural, Leadership, and Community Education
Virginia Polytechnic Institute and State University, Blacksburg, VA
Phone: 540-231-9665; Email: vcrowder@vt.edu

Education:

B.S., Cornell, 1974; M.S., Communication Arts, Cornell
Ph.D., Adult and Continuing Education, Cornell.

Experience Summary: As Executive Director of the Office of International Research, Education and Development, Van Crowder oversees the university unit that manages large, donor-funded projects around the world. Currently, this represents a portfolio of approximately $60 million. Dr. Crowder has more than 30 years of experience with international development projects. The many facets of his career include helping farmers in Nicaragua improve food security, managing a watershed project in Jamaica, evaluating education programs at a university in Yemen, and establishing a farmer advisory service in Uganda. His consultant work includes assignments in numerous countries across Latin America, Africa, Asia and the Middle East.

Professional Experience:

Senior Director, Human and Community Development (HCD), Millennium Challenge Corporation (MCC, U.S. State Department), 2008-2015. Responsible for $800 million education, health and community development project portfolio in 12 countries.


Associate Director, International Programs and Associate Professor (tenure), Institute for Food and Agricultural Sciences (IFAS), University of Florida, Gainesville, FL, 1981-1991.

**Selected Publications:**


A. J. (Jack) Davis, FAIA  LEED AP
Dean and Professor
Reynolds Metals Endowed Chair in Architecture

EDUCATION
M.Arch  Virginia Polytechnic Institute and State University 1975
B.Arch  Virginia Polytechnic Institute and State University 1974

ACADEMIC APPOINTMENTS
2007 – Present  Dean, College of Architecture and Urban Studies
2006  Interim Dean, College of Architecture and Urban Studies
2002 – 2007  Associate Dean for Academic Affairs; Overseeing curriculum for 23 degrees, international programs and Chair of Curriculum, Diversity and Honorifics Committees
1995 – 2006  Continuing Education Coordinator for School of Architecture + Design
1994 – 2001  Chairman, Professional Program; involves comprehensive education of 3rd, 4th and 5th year architecture students; Approximately 350 students and 24 faculty
1985 – 1998  Director of Professional Extern Program, involves student placement in offices and other universities, nationally and internationally
1984  Associate Professor, College of Architecture & Urban Studies, Virginia Tech
1983  Visiting Professor, College of Architecture & Urban Studies, Virginia Tech
1979 – 1980  Design Studio Instructor, Boston Architectural Center, Boston, MA
1975 – 1979  Assistant Professor, College of Architecture, University of Florida, Gainesville, Fla.
1975  Appointment to Graduate Faculty, University of Florida
1974  Graduate Teaching Assistant in the Professional Program, College of Architecture and Urban Studies, Va. Tech

RESEARCH, SCHOLARLY, AND CREATIVE ACHIEVEMENTS
Selected Research Grants and Activities
1994  Co-Principal Investigator, A Proposal for the Development of Technology Courses at the Graduate and Undergraduate Level in Architecture, Summer 1994 (Center for Excellence in Undergraduate Teaching, $5,000)
1991  Co-Investigator, Research + Demonstration Facility Phase II, This 4400 square foot Phase II is for an indoor air quality research laboratory and cold air distribution mechanical system. (Philip Morris, Inc. $634,907.00.)
Co-Investigator, Technology Development for Removal of Indoor Air Pollutants, (Union Carbide Chemical and Plastic Company $365,329.00.)
Principal Investigator, Research Data Access and Dissemination (Core Research Grant. $4127.00.)
1990  Principal Investigator, Concrete Masonry Investigative Tour, Sponsored Programs/CAUS Special Travel Grant to Central Europe, $3600.00.
Principal Investigator, Research Analysis and Dissemination in Concrete Masonry Construction (Core Research Grant, $4500.00.)
1989  Principal Investigator, Data Acquisition and Analysis in Concrete Masonry Construction, Part II, (Core Research Grant, $3047.00.)
1988  Principal Investigator, Data Acquisition and Analysis in Concrete Masonry Construction, Part I, (Core Research Grant, $5000.00.)

**Total Grant Involvement Dollars to date: $2,535,627** (not including $24,000 in grant funding to the Town of Blacksburg listed in Public Service)
SELECTED PUBLICATIONS
2014 Interview with Amelia Taylor-Hochberg; Archinect online magazine.
2001 Davis, A. J., ARCC National Meeting Proceedings, The Building of Research, A Center for the Study of Educational Facilities,

MEMBERSHIP
2013–14 National Academy of Environmental Design, Board member
2012 – present Member, AIA Large Firm Roundtable
2010–13 National Academy of Environmental Design, Sponsoring member
2010–2016 Board of Directors and Vice President CIB (International Council for Research and Innovation in Building and Construction)
2009–11 Founding President; Architecture + Construction Alliance (A+CA)
2007 LEED Accredited Professional
1999 – present Elected to the College of Fellows, American Institute of Architects
1993 – present National Trust for Historic Preservation
1985 – present American Institute of Architects, National, Virginia and Blue Ridge Chapters
1994 University Affairs Committee, Virginia Society A.I.A.
Architects in Education; A.I.A. sub-committee
1986–88 Chairman; Energy Committee, Virginia Society A.I.A.
Coordinated the first "ENERGY + DESIGN AWARDS" Program with a Nationally recognized Jury
Coordinated presentations for "Building Virginia" in 1987 and 1988

REGISTRATION
1988 – present Registered Architect; State of Virginia
1986 National Council of Architectural Registration Board Certification Present (NCARB)
1982 – present Registered Architect; State of Florida

SELECTED PROFESSIONAL AWARDS AND RECOGNITION
2013 Senior Fellow, Design Futures Council
2009, 2014 Most Admired Educators of 2009 and 2014 by DesignIntelligence
1999 Elected to the College of Fellows, American Institute of Architects
Blue Ridge Chapter, Virginia American Institute of Architects, Merit Award; Shepherd Residence
Robert Dunay, FAIA
Director, Center for Design Research
ACSA Distinguished Professor, T.A. Carter Professor of Architecture

Professional Preparation
Virginia Tech Architecture B.Arch 1971
Virginia Tech Architecture M.Arch. 1978

Appointments
Director, Center, Design Research Virginia Tech, College of Architecture 2009 - present
Director, Industrial Design Virginia Tech, College of Architecture 1998 - 2008
Associate Dean Virginia Tech, College of Architecture 1993 - 2004
T. A. Carter Endowed Professor Virginia Tech, College of Architecture 1998 - present
Professor Virginia Tech, College of Architecture 1975 – 1992

Honors and Awards (past 10 years)
2016 *The Noland Medal*, highest honor bestowed by the American Institute of Architecture Virginia to an architect (one awarded yearly)
2013 Named “Most Admired Educator of 2013” by Design Intelligence, (25 chosen nationally)
2012 *American Institute of Architects, National Institute Award for Excellence in Architecture*, Washington D.C., LumenHAUS cited as one of the nation’s nine best works of architecture, Jan, (with J. Wheeler, R. Schubert, D. Clark)
2012 Named “Most Admired Educator of 2012” by Design Intelligence, (25 chosen nationally)
2011 ACSA Distinguished Professor, one of four nationally (Association of Collegiate Schools of Architecture)
2011 Named “Most Admired Educator of 2011” by Design Intelligence, (26 chosen nationally)
2011 Creative Partnership Award of Excellence, CASE; Council for the Advancement of Scholarship and Education
2010 First Prize, Solar Decathlon Europe, Primary Faculty
2010 NCARB Prize, National Council of Architectural Registration Boards; one of six nationally recognized projects for integration of academia and practice
2010 American Institute of Architects Research Prize, Virginia Society
2010 X-caliber Award, Virginia Tech University Award for Outreach Excellence
2010 American Institute of Architects, Blue Ridge AIA Design Honor Award – LUMENHAUS
2009 Named “Most Admired Educator of 2009” by Design Intelligence (26 chosen nationally)
2009 Braun Prize Forum, invited forum juror to select 2009 Braun Prize winners, Braun/P&G  Headquarters, Kronberg, Germany
2008 College of Architecture Award for Outreach Excellence
2007 American Institute of Architects Design Award for Excellence in Architecture, Virginia Society, Meditation Room, abc TV show Extreme/Makeover Home Edition
2006 NCARB Prize, National Council of Architectural Registration Boards, Honorable Mention, award for integration of academia and practice (with J. Wheeler and R. Schubert)
2006 State AIA Honor Award for Excellence in Architecture, Virginia Society AIA
2005 AIA President’s Award for Best Solar House, chosen from 20 research universities of the Solar Decathlon Competition
2005 International Contemporary Furniture Fair (ICFF), Jacob Javits Convention Center, New York City, one of six school selected nationally to exhibit work
2003 NCARB Prize, National Council of Architectural Registration Boards; one of six nationally recognized projects for integration of academia and practice, $7500 (with R. Schubert and Solar Decathlon Team)
2003 “Editors’ Award for Best Design School,” International Contemporary Furniture Fair (ICFF), Jacob Javits Convention Center, New York City
2003 International Design Magazine Award, “Best Conceptual Project” (with R. Schubert and Solar Decathlon Team)
Decathlon Team
2003  XCalibur Award, Virginia Tech, university award program recognizing outstanding contributions to learning, illustrating innovative approaches to teaching using technology
2003  Outstanding Creative Achievement Award, Virginia Tech, College of Architecture

Publications

Related Publications

Synergistic Activities
2016 Prince William County, Eco-Park Learning Center, concept and design development, $100,000, with Jonathan King, David Clark
2011 Solar Decathlon Europe, $140,000, LUMENHAUS, winner of Solar Decathlon Europe, Primary Faculty
2008 Sharma, A, Dunay, R, Mills, J, Interdisciplinary Research Grant (IRG), formation of an interdisciplinary team to further research on autonomous electric vehicle, $28,000
2007 ConocoPhillips research grant, Solar Decathlon Competition, $350,000
2007 Sharma, A, Dunay, R, Institute for Critical Technology Advancement in Science (ICTAS), prospectus for the design of an autonomous electric vehicle, $46,000
2007 Department of Energy research grant, Solar Decathlon Competition, $100,000, Primary Faculty
2007 Consultant, GA. Tech Solar Decathlon Team, Atlanta, Georgia
2005 Extreme Makeover/Home Edition, design and construction of a house for the abc TV show designed in one week and built in four days. The two-hour show aired on national television in Jan 2006.
2005 Department of Energy Solar Decathlon Competition - primary faculty for the Virginia Tech entry to the national competition, $5,000 + 180,000, Primary Faculty
2002 Department of Energy Solar Decathlon Competition - primary faculty for the Virginia Tech entry to the national competition, $5,000 + 120,000, Primary Faculty Collaborators David Clark (Va Tech), Michael Ellis (Va Tech), D. Gracanin (Va Tech), Jonathan Grinham (Catholic University), M.

Graduate and Postdoctoral Advisors
Thesis Advisor and Postgraduate-Scholar Sponsor
Total number of students advised: 68
BIOGRAPHICAL SKETCH—STEPHEN EUBANK
Deputy Director, Network Dynamics and Simulation Science Laboratory, Biocomplexity Institute of Virginia Tech, Virginia Polytechnic Institute and State University, Blacksburg, VA 24060, tel: (540) 231-2504, Email: eubank@vbi.vt.edu

A. PROFESSIONAL PREPARATION:

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<th>Location</th>
<th>Degree</th>
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<td>Swarthmore, PA</td>
<td>Physics</td>
<td>1979</td>
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<td>University of Texas at Austin</td>
<td>Austin, TX</td>
<td>Physics</td>
<td>1986</td>
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<tr>
<td>La Jolla Institute</td>
<td>San Diego, CA</td>
<td>Fluid Dynamics</td>
<td>1987</td>
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<tr>
<td>Los Alamos National Laboratory</td>
<td>Los Alamos, NM</td>
<td>Nonlinear Dynamics</td>
<td>1988-91</td>
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B. APPOINTMENTS:

2014-present  Professor, Department of Population Health Sciences, Virginia Tech
2008-present    Nonresident Senior Fellow at The Brookings Institution Center on Social and Economic Dynamics
2005-present   Deputy Director, Network Dynamics and Simulation Science Lab, Biocomplexity Institute of Virginia Tech (formerly Virginia Bioinformatics Institute), Virginia Tech
2005-present Adjunct Professor of Physics, Virginia Tech
1997-2004  Staff member, Basic & Applied Simulation Sciences Group, LANL, Los Alamos, NM
1995-1997 Invited Researcher, Interpreting Telecommunication Laboratory, ATR, Kyoto, Japan
1994-95 Complex Systems Associate (half time), Biosphere Space Ventures, Tucson, AZ
1994-95 Contractor, TRANSIMS project, LANL, Los Alamos, NM

C. PRODUCTS:

(i) Products Most Closely Related to the Proposed Project.


(ii) Other Significant Products.


D. SYNERGISTIC ACTIVITIES:
1. **Computational modeling of infectious disease epidemiology.** Over the past decade and a half, as a PI for the NIH-NIGMS MIDAS project, I have advocated for bringing modern computational modeling to infectious disease epidemiology and, taking advantage of the power of these models, to incorporate more information about behavior at the individual level. I have applied mathematical and computational models of infectious disease to support decisions about health: smallpox for the White House Office of Homeland Security; influenza for DHHS and DoD; other diseases for DoD and IARPA.

2. **Bringing insights from computer science, physics, engineering and math to complex network science.** Over the past four years, I have extended the theory and applications of the concept of network reliability introduced by Moore and Shannon, integrated it with insights from computational complexity theory and critical phenomena in physics, and applied it to networked dynamical systems. These methods provide a powerful framework for understanding how the structure of complex networks affects dynamical processes taking place on those networks.

3. **Immune system modeling.** I led development of the ENISI immune system simulation. This high-performance computing enabled, agent-based simulation of interactions among spatially distributed epithelial cells, T-cells, macrophages, and bacteria, including the concentrations of intercellular cytokines and chemotaxis set a benchmark for immune system modeling. It transformed the way we think about modeling such systems and the ways modelers contribute to transdisciplinary approaches to immunology.

4. **TRANSIMS.** As a staff member at Los Alamos, I collaborated with the team building the Transportation Analysis and Simulation System. This early, high-performance computing-enabled, agent-based simulation of an actual, not idealized, large-scale engineered system set a benchmark for the field of modeling coupled social/technical systems. It completely transformed the way we think about modeling such systems and the kinds of scientific evidence transportation planners can expect from models. My role in this project was to help design the overall system and to implement specific capabilities in the traffic simulator.

5. **Time series prediction in nonlinear and chaotic dynamical systems.** Novel methods to identify chaos in experimental data and to make use of deterministic chaos to improve noise reduction and time series prediction. A paper with Theiler on the method of surrogate data has received over 3000 citations, according to Google Scholar.
GEORGE E. GLASSON
Professor, School of Education
Virginia Polytechnic Institute & State University (Virginia Tech)
370 Drillfield Drive, 203 War Memorial Hall
Blacksburg, VA 24061
Voice: 540-231-8346; Fax: 540-231-9075, E-mail: glassong@vt.edu

Professional Preparation
University of North Carolina-Chapel Hill, Curriculum & Instruction (Science Education), Ph.D., 1986
Duke University, Science Education, M.A.T., 1975
Duke University, Zoology, BA, 1973

Appointments
Virginia Tech, School of Education, Blacksburg, VA
  Professor of Science Education, 1987 - present
Indiana University-Bloomington, Department of Curriculum & Instruction
  Visiting Assistant Professor of Science and Environmental Education, 1986-87
Guy B. Phillips Junior High School, Chapel Hill, NC
  Teacher (Life Science, Oceanography, Physical Science), 1977-1986
Hillside High School/Durham High School, Durham, NC
  Teacher (Biology, Physics), 1974-76

Closely Related Publications

Other Related Publications


Synergistic Activities
- The Virginia Tech PhysTEC Project, grant from the The Physics Teacher Education Coalition and National Science Foundation to help increase the number of secondary school physics teachers (Co-PI, 2011-2014)
- Active Engagement of Teachers and Children in Inquiry Science Teaching and Place-based Education in Thailand. (PI, 2010)
- Mobile Malawi Project (www.mmp.soe.vt.edu). Developed sustainable agricultural curriculum program connecting local farmers with primary schools via mobile phones, (PI, 2007-2010).

Collaborators
Leo Piilonen, Physics, Virginia Tech
John Simonetti, Physics, Virginia Tech
Brenda Brand, Science Education, Virginia Tech
Josiah Tlou, Social Studies Education, Virginia Tech (retired)
Rojjana Klechaya, Science Education, Srinakharinwirot University, Thailand
Myeong-kyeong Shin, Science Education, Gyeongin National University of Education
Michael Hochella, Geoscience, Virginia Tech
Ndalapa Mhango, Social Studies Education and Distance Learning, Domasi College, Malawi
Andre Green, Science Education, University of South Alabama
Lee Vierling, Geoscience, University of Idaho

Doctoral Students Chaired
Hey, Mae (Ph.D. 2017, Virginia Tech)
Sulsberger, Megan (Ph.D., 2014, Univ. California State Univ.-Monterey Bay)
Shelton, Mythianne (Ph.D. 2014, Radford University)
Lanier, Marilyn (Ph.D., 2012, Fayetteville State University, NC)
Piri, Absalom (Ph.D., 2008, Malawi Ministry of Education, deceased)
Mhango, Ndalapa (Ph.D., May 2008, Domasi College, Malawi)
Grady, Julie, (Ph.D., May 2007, Arkansas State University
Green, Andre’ (Ph.D., 2006, University of South Alabama)
McLaughlin, John (Ph.D., 2006. Lord Botetourt High School, VA)
Grosshans, Kurt (Ed.D., May 2006, Christiansburg High School, VA)
Casey, Dennis (Ph.D., 2001, Virginia Museum of Natural History, Martinsville, VA)
Brand, Brenda (Ph.D., 1998, Virginia Tech University)
McKenzie, Woodrow (Ph.D., 1996, Lynchburg College, retired)
Taylor, B. (Ph.D., 1994, retired)
EDUCATION

**Harvard University Graduate School of Design**, Cambridge, MA
*Doctor of Design*: 2015
Thesis: *A Framework for Understanding Automated Additive Manufacturing and Construction (AAMC) of Buildings*

**Virginia Tech School of Architecture + Design**, Blacksburg, VA
*Master of Architecture*, 2012
Thesis: *Implementation of Manufactured Components in User Assembled, Pre-Fabricated Building Systems*

*Master of Science in Architecture: Industrial Design Concentration*, 2012
Thesis: *Deployable Infrastructural Support for Science and Education.*

**Randolph-Macon College**, Ashland, VA
*Bachelor of Arts in Studio Art*, cum laude, with Honors, 2002
Thesis Exhibition: *A Time in Place: Large Format In-Situ Painting*, Pace Gallery
*Bachelor of Arts in Art History*, cum laude, with Honors, 2002
Thesis: *Black Mountain College: Art as the Foundation for Education.*

BOOK PUBLICATIONS


SELECTED CONFERENCE AND JOURNAL PUBLICATIONS

NATHAN KING
nathanking.king@gmail.com

- N.King, M. Bechthold, and A. Kane “Modular Automation Strategies for Robotic Fabrication” in Fabricating the Future by Philip F. Yuan and Neil Leach, Tongji University Press, 2012

AWARDS

2015 Excellence in Scholarship Award, Virginia Tech, School of Architecture + Design
2015 Innovator in Practice Fellowship, University of Virginia (UVA)
2015 Class Favorites: Best Projects of 2015, (w/MASS Design- CTC)
2015 Sappi Ideas That Matter, Winner, (w/MASS Design- CTC)
2015 Design Boston Biennial, Winner, (w/MASS Design- CTC)

GRANTS | FUNDING

2017 Autodesk BUILD Space grant Digital Glass; Sponsored Research, ($40K)
2016 Aging in Place, Autodesk w/ GE Appliances, Sponsored Research, ($15K)
2016 Autodesk Foundation Impact Design Grant-, Virginia Tech, Center for Design Research; ($100K/y)
2016 Institutional Renovation Grant, Virginia Tech; with R.Dunay and D.Clark ($140K)
2016 Glass Infrastructure Development Funding, Virginia Tech, ($120K)
2016 Log Jam! Autodesk for SmartGeometry2016; with G.Fagerstrom and N.Cote ($5K)
2016 Dynamo BUILD! RobArch2016; w/G.Fagerstrom M.Jezyk, and N.Cote ($5K)
2016 Sponsored studio; Prince William County EcoPark; with R.Dunay and D.Clark ($53K)
Leigh-Anne Krometis, Ph.D., E.I.T.
Assistant Professor
Department of Biological Systems Engineering
Virginia Tech
http://ww2.bse.vt.edu/krometis/
krometis@vt.edu

(a) Professional Preparation
Virginia Tech  Blacksburg, VA Biological Systems Engineering  B.S. 2002
Virginia Tech  Blacksburg, VA Biological Systems Engineering  M.S. 2004

(b) Appointments
2011-Present     Biological Systems Engineering, Virginia Tech Assistant Professor
2009-2011     Biological Systems Engineering, Virginia Tech Research Assistant Professor
2009    Environmental Science & Eng, Univ of NC Postdoctoral Researcher

Select Publications (out of 33 total peer-reviewed, H Index=11)

i. Five Related Publications

ii. Other Relevant Publications


(d) **Synergistic Activities**
- **Co-Director**, NSF StREAM REU (“Dynamics of Water and Societal Systems: An Interdisciplinary Research Program at the Virginia Tech StREAM Lab”), 2012-2014. Co-led summer research program focused on interdisciplinary watershed management; hosted 28 undergraduates from 18 different home institutions representing 18 different disciplinary degrees.
- **Virginia Tech Imagination Camp Faculty Volunteer**, 2010-2014. Designed and led hands-on field and lab-scale activities focused on environmental microbiology and public health for 100 middle-school students participating in a Virginia Tech summer camp.
- **Faculty Member**, Virginia Tech Center for Global Change, 2014-present. (steering committee for Interfaces of Global Change PhD Program, 2014-2015).
- **Team Member and Research Student Advisor**, Cooperative Extension Virginia Household Water Quality Program, 2011-2015. Provides education and low cost water quality testing to homeowners reliant on private water supplies (e.g. wells, springs); program received the Florence Hall Award from the National Extension Association of Family and Consumer Science in May 2013; six resultant peer-reviewed publications led by students.
- **Faculty Fellow**, Virginia Tech Honors Residential Commons, 2010-present. Broad aim is to support the development of interdisciplinary residential colleges that will house and nurture students academically throughout their college career.
Bryan Lewis
Virginia Tech – Biocomplexity Institute of Virginia Tech, formerly Virginia Bioinformatics Institute
1015 Life Science Circle, Blacksburg, VA 24061, (540) 231-9969, blewis@vbi.vt.edu

(a) Professional Preparation

Carnegie Mellon University       Pittsburgh, PA       Computational Biology       BS, 1997
University of California        Berkeley, CA       Infectious Disease         MPH, 2001
Virginia Tech                  Blacksburg, VA       Genetics, Bioinformatics, & Comp Biology     PhD, 2011

(b) Appointments

2016-present       Research Associate Professor, Biocomplexity Institute of Virginia Tech, Virginia Polytechnic Institute and State University
2015-present       Research Assistant Professor, Biocomplexity Institute of Virginia Tech, Virginia Polytechnic Institute and State University
2011-2015          Research Scientist, Biocomplexity Institute of Virginia Tech, Virginia Polytechnic Institute and State University

(c) Most Relevant Publications


Other Significant Publications


(d) Synergistic Activities

1. 2008-present: Member of American Public Health Association
2. 2014-present: Member of International Society for Disease Surveillance
John Johnson Lipsey, II

Personal Information

Employer: Office of International Research, Education, and Development (OIRED)
Virginia Tech, Office of Outreach and International Affairs
526 Prices Fork Road (0378), Blacksburg, VA 24060
+1 (540) 231-2009 | jlipsey@vt.edu

Title: Associate Director, Strategic Partnerships and Program Development

Professional Experience:
International Development Specialist, Donor Relations and Partnerships
International project planning and development; organizational management and development; team building and leadership; government relations; international business development and resource mobilization; communications and public outreach; technical writing; proposal facilitation; consulting technical advisory services

Country Experience
Austria, Cambodia, China, Germany, Ghana, France, Kenya, Japan, Laos, Lesotho, Nepal, Netherlands, Malaysia, Myanmar, Thailand, Philippines, Timor Leste, Togo, Vietnam, UK, USA

Short Profile/Summary

Mr. Lipsey has worked in international development and development cooperation for over fifteen years. He has experience across the international development community in forging relationships and developing opportunities with bilateral agencies, international financial, international agencies and organizations, foreign governments, and academic/research, and corporate and philanthropic foundations. Working with many foreign assistance donors and agencies, he has promoted technical and advisory services encompassing both hard disciplines (scientific, engineering, design) and soft disciplines (social, economic/financial, environmental, governance, human rights, gender equity, and individual and institutional capacity building) that combine to form robust and impactful projects in developing and emerging countries and communities.

He has managed resource mobilization, business development, and tender, proposal and grant management for NGOs and firms, improving program design, fundraising, competitive contracts, team and consortium building, and public outreach and communication. He has contributed to technical reports and papers on many subjects including program results, evaluations, due diligence investigations, environmental impact analyses, and capacity building. He has experience in policy and technical research and writing on issues and trends in international development, effectiveness, and impact. His technical writing has covered human and environmental health, water and natural resource management, and climate change.

His academic and professional dedication to responsible public policy translated into his interest in international development and the awareness that governments and businesses have a large role to play in balancing human development and environmental protection with creating economic opportunity and prosperity.

Education/Qualifications

MBA/Global Management, California State University/Transnational Executive MBA Program, Hayward, California USA: Cross-cultural international management education in organizational design, strategic planning, marketing, financial/economic
research/analysis, and creative leadership with focus on global consulting and technical services.

**1980-1986**  
**BA/Government & Foreign Affairs**, University of Virginia, Charlottesville, Virginia USA: Focus on comparative international systems, diplomatic history, economics, and international organizations, and foreign assistance programs.

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**Professional Experience Highlights**

- **2016-present**  
  **Associate Director, Strategic Partnerships and Program Development, Office of International Research, Education, and Development (OIRED), Blacksburg, Virginia**  
  VT’s OIRED links Virginia Tech to the world by supporting the university’s international mission through projects and research that raise the standard of living in developing countries. Mr. Lipsey is helping to expand the internationalization of university partners and programs in Virginia Tech areas of excellence in global research and development. He enhances diversity of strategic partners, donors and funding channels across university departments and colleges.

- **2016-2016**  
  **Regional Public Sector Partnerships Coordinator, WWF Greater Mekong, Phnom Penh, Cambodia**  
  WWF’s Greater Mekong Region, covering Cambodia, Laos, Myanmar, Thailand, and Vietnam, is protecting one of the world’s most diverse biological regions. Mr. Lipsey managed Public Sector funding in the region and abroad to build partnerships to promote conservation strategies that protect, preserve, and restore the Mekong region’s diverse wildlife species, unique landscapes, and threatened natural resources.

- **2013-2016**  
  **Business Development and Partnerships Unit Head, Swiss Centre for International Health, Swiss Tropical and Public Health Institute, Basel, Switzerland**  
  To contribute to better human health, well-being, and quality of life particularly in low and middle income countries, the Swiss Centre for International Health draws on the excellence in research, technical services, technology, and training of the Swiss Tropical and Public Health Institute (Swiss TPH) based at the University of Basel. To increase and expand the SCIH’s role and impact in building capacity of health systems across many countries, Mr. Lipsey is leading outreach and cultivating rationships and alliances with funding agencies, donors, and partners.

- **2012**  
  **Trust Fund Evaluation Consultant, The World Bank / Philippines**  
  The World Bank, the developing world’s largest source of funding and knowledge to raise social standards and protect the environment, delivers much of its social and environmental technical assistance though Trust Funds set up by international donors. Mr. Lipsey conducted an evaluation of the relevance, efficiency, effectiveness, sustainability, and impact of activities supported by trust funds and grants funded by international donors.

- **2009-2011**  
  **Sr. Partnership Manager, SNV Netherlands Development Organisation, Washington, DC USA**  
  SNV is a social enterprise that provides strategic advisory services, technical assistance, and innovative solutions to eliminate poverty and inequity in 35 developing countries in Asia, Africa, Latin America, and the Balkans. For SNV’s US office, opened in 2009, Mr. Lipsey provided strategic support and leadership in organizational change, fundraising, donor relations and procurement cycles, and communications and events for increased recognition and visibility.

- **2005-2009**  
  **New Business Development Coordinator, CDM Smith, Walnut Creek, California and Arlington, Virginia USA**  
  CDM is a worldwide environmental consulting, engineering, and construction firm known for landmark infrastructure projects in master planning, water and sanitation, energy, transportation, and construction. Mr. Lipsey provided new business capture services from client relationships, research, and opportunity tracking, through proposal design, development and team facilitation.

- **1996-2004**  
  **Business Development Director, NW & Pacific Region, Tetra Tech, Inc. Resource Management Group, San Francisco Bay Area USA**  
  Tetra Tech is an environmental engineering and planning firm providing environmental and natural resource management analysis and support worldwide. Mr. Lipsey provided strategic/tactical planning for environmental consulting in global climate change, ecosystem protection, and environmental impact analysis.
**Biographical Sketch**
Andre Albert Muelenaer, Jr, MD, MS  
Associate Professor, Section Chief, Pediatric Pulmonology/Allergy  
Department of Pediatrics, Virginia Tech Carilion School of Medicine  
102 Highland Avenue, SE, Suite 203, Roanoke, Virginia 24013  
540.985.9835 (office) 540.985.4018 (fax)  
aamuelenaer@carilionclinic.org

(a) Professional Preparation  
<table>
<thead>
<tr>
<th>Institution</th>
<th>Location</th>
<th>Degree</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virginia Tech</td>
<td>Blacksburg VA</td>
<td>Biology</td>
<td>BS 1975</td>
</tr>
<tr>
<td>Virginia Tech</td>
<td>Blacksburg VA</td>
<td>Zoology</td>
<td>MS 1979</td>
</tr>
<tr>
<td>Eastern Virginia Medical School</td>
<td>Norfolk VA</td>
<td>Medicine</td>
<td>MD 1979</td>
</tr>
<tr>
<td>William Beaumont Army Medical Center</td>
<td>El Paso TX</td>
<td>General Pediatrics Residency</td>
<td>1979-1982</td>
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<tr>
<td>University of North Carolina</td>
<td>Chapel Hill NC</td>
<td>Pulmonology Fellowship</td>
<td>1985-1988</td>
</tr>
</tbody>
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(b) Appointments  
2014-present: Adjunct Professor- Virginia Tech Faculty of Health Sciences  
2009-present: Chief Medical Officer & President, Pediatric Medical Device Institute.  
2009-present: Associate Professor, Chief, Section of Pediatric Pulmonology and Allergy, Department of Pediatrics, Virginia Tech Carilion School of Medicine  
2009-present: Associate, Childress Institute for Pediatric Trauma, Wake Forest University School of Medicine  
2006-present: Adjunct Professor, Virginia Tech/Wake Forest University School of Biomedical Engineering and Sciences  
2001-2011: Medical Director, Carilion Biomedical Institute, Roanoke, VA  
1992-2013: Assistant Professor of Pediatrics, University of Virginia, Charlottesville, VA  
1991-present: Medical Staff, Carilion Children’s Hospital  
1988-1991: Assistant Professor of Pediatrics, Attending Pediatric Pulmonologist, Research Director of B.S. Blackard Hypoventilation Research Center; Director, Pediatric Bronchoscopy Service, Division of Pulmonary Disease, Department of Pediatrics, Duke University Medical Center, Durham, NC  
1984-1985: Staff Pediatrician and Chief of Newborn Services, Womack Army Hospital, Fort Bragg, NC  
1982-1984: Staff Pediatrician, Frankfurt Army Regional Medical Center, West Germany

(c) Products  


(d) Synergistic Activities
Biomedical Engineering for Global Health (BMES 5984, CRN 17950 VT, BMES 708, Class Number 1235 WFU) Spring 2014 co-developed and initiated curriculum with Lissett Ramirez Bickford, PhD, Department of Mechanical Engineering, Virginia Tech


Muelenaer A. Designing for the Underserved, (platform presentation) Health Technology Forum Innovation Conference- Platforms for the Underserved. (oral presentation) UCSF, San Francisco, CA April 2103

Scieneering in Malawi: Leader of team from Virginia Tech and VTCSoM consisting of MD/MPH, MS-Mechanical Engineering, MS- Electrical Engineering, BS- Mechanical Engineering. Introduce appropriate affordable technologies at 8 hospitals throughout Malawi. Establish better working relationships with educational partners. (Mzuzu and Mulanje) Follow up educational activity for community-based research conducted in Malawi during summer 2013. July-August 2014

Co-Founder of TEAM Malawi: Since 2015, Virginia Tech faculty, staff and students have been engaged in an initiative called TEAM Malawi (Technology-Education-Advocacy-Medicine Malawi) that is a transdisciplinary collaboration, based upon a community wellness model of health, designed to meet the challenges of resource-limited environments through community based participatory research/design/pedagogy. Its vision is to utilize a community wellness model as the framework to integrate the activities of a disparate group of young investigators and mentors. The primary goal is Student Engagement, with a desire to:

- Foster global perspectives of students.
- Stimulate ideas for improving conditions in a developing country.
- Create sustainable relationships that promote transdisciplinary models for development.
- Encourage evidence-based applied scholarly research.

TEAM Malawi now collaborates with the Virginia Tech Office of International Research Education and Development, and there are TEAM Haiti and TEAM Uganda projects as well.

CitiHope Relief and Development: Vice President and Chief Medical Officer. Mission is to put a healthy life within reach by promoting health, preventing disease, and providing cures to underserved populations worldwide. Conducts needs assessments for donated medical supplies and pharmaceuticals in multiple countries throughout Africa, the Middle East, and Caribbean. Primary donor is the Coca Cola Africa Foundation.
Penelope Ann Muelenaer, MD, MPH
Assistant Professor
Department of Pediatrics, Virginia Tech Carilion School of Medicine
Roanoke, VA 24013, 540.798.6527 (office)
pamuelenaer@carilionclinic.org

(a) Professional Preparation

2014 Public Health, MPH, Virginia Tech, Blacksburg, VA
1985-1989 Pediatric, Infectious Disease, Fellowship, University of North Carolina, Chapel Hill, N.C.
1979-1982 Residency, Pediatrics, William Beaumont Army Medical Center, El Paso, TX
1979 Medicine, MD, Eastern Virginia Medical School, Norfolk, VA
1974 Biology, BS, Virginia Tech, Blacksburg, VA,

(b) Professional Appointments

2010-present Assistant Professor, Department of Pediatrics, Virginia Tech Carilion School of Medicine Roanoke, VA
1992-2004 Director, Pediatric Infectious Disease Clinic, Assistant Professor of Clinical Pediatrics, University of Virginia, Roanoke, VA
1991 Associate Professor Department of Pediatrics, Duke University Medical Center, Durham, N.C.
1990 Assistant Professor of Pediatrics, University of North Carolina, Chapel Hill, N.C.
1989 Clinical Instructor University of North Carolina at Chapel Hill
1984-1985 Staff Pediatrician (Major) Womack Army Hospital, Fort Bragg, N.C.
1982-1984 Staff Pediatrician, Frankfurt Army Regional Medical Center, West Germany

(c) Research and Publications


(d) Synergistic Activities

Affiliate Faculty Virginia Tech (William Pierson) Veterinary Medicine, Population Health Sciences MPH Program, Prevention Infectious Diseases Course, Vaccination Programs, Nov, 2016.


Scieneering in Malawi: Leader of team from Virginia Tech BS- Mechanical Engineering, BS-Electrical Engineering, Established need for appropriate affordable medical technology to develop a infant resuscitator for low and middle income countries. Follow up educational activity for community-based research conducted in Malawi during summer 2013. July-August 2014

Co-Founder of TEAM Malawi: Since 2015, Virginia Tech faculty, staff and students have been engaged in an initiative called TEAM Malawi (Technology-Education-Advocacy-Medicine Malawi) that is a transdisciplinary collaboration, based upon a community wellness model of health, designed to meet the challenges of resource-limited environments through community-based participatory research/design/pedagogy.
RYAN M. POLLYEA

Professional Preparation

University of Dayton Dayton, OH Environmental Geology B.S. 1999
University of Idaho Moscow, ID Geology Ph.D. 2012

Appointments

2015 – present Assistant Professor, Dept. Geosciences, Virginia Tech
2013 – 2015 Assistant Professor, Dept. Geology & Env. Geosciences, Northern Illinois University
2002 – 2010 Staff Geologist, Shaw Environmental, Inc.
2001 – 2002 Water Use Analyst, California Dept. of Water Resources

Products – most closely related to proposal


Products – other


Synergistic Activities

- Departmental organizer for STEMFest 2012 – 2014, a regional exposition held annually at the NIU Convocation Center to encourage interest in the STEM fields for K-12 students in northern Illinois and greater Chicago metropolitan area.
- Developed outdoor field classroom for teaching data acquisition and analysis methods for undergraduate students with career interests related to environmental site characterization, remediation, and rehabilitation.
- Worked with Departmental student organization (Sigma Gamma Epsilon) to develop new geology curriculum for the Northern Illinois University Taft Campus, which is an outdoor educational facility designed to give hands-on outdoor educational experiences to 5th through 8th grade students from urban schools.
Nicholas F. Polys

Advanced Research Computing
Virginia Tech
Wright House (MC 0531)
Blacksburg, VA 24060

(540) 231-0968
npolys@vt.edu

Education

Vassar College                  Cognitive Science   B.A.  1996
Virginia Tech                   Computer Science    Ph.D.  2006

Appointments

Virginia Tech

Director of Visual Computing   Advanced Research Computing  08/01/08 – present
Affiliate Professor            Dept. of Computer Science   08/01/08 – present
Faculty                        Health Sciences              06/01/16 – present
Catalyst Fellow                Institute for Creativity, Arts, and Technology 01/01/12 – present
Post-doctoral Researcher      Advanced Research Computing  08/01/06 – 08/01/08

Closely Related Products


Other Products


Synergistic Activities

- **Co-Principle Investigator** on several undergraduate education and hardware infrastructure grants: NSF Computing Research Infrastructure (CRI II-New): Living Lab for Asynchronous and Synchronous Investigation of Virtual and Real Environments, NSF Research Experience for Teachers (RET) New Dimensions in e-Learning; NSF IUSE: Wireless Testbeds for Authentic STEM Learning; VT Visionarium Lab Director

- **President** (elected): Web3D Consortium international standards not-for-profit (2009-present) driving the standardization of ISO/IEC Extensible 3D (X3D) and X3DOM


- **Member**: ACM, IEEE, VT Interdisciplinary Center for Applied Mathematics (ICAM) and the Center for Human-Computer Interaction (CHCI) (since 2006); Institute for Creativity, Arts, and Technology (ICAT) (since 2013), Web3D Consortium (since 2000)

Cassidy Rist
Assistant Professor
Center for Public and Corporate Veterinary Medicine
Department of Population Health Sciences
Virginia-Maryland College of Veterinary Medicine
Crist6@vt.edu

Professional Preparation

Harvard Medical School  Global Health and Social Medicine  Postdoc  2014-2015
CDC  One Health  Fellow  2012-2014
Emory University  Global Epidemiology  MPH  2014
University of Florida  Veterinary Medicine  DVM  2005

Appointments

2016 – pr.  Assistant Professor, Department of Population Health Sciences, Virginia-Maryland College of Veterinary Medicine, Virginia Tech, Blacksburg, VA
2015 – 2016  Veterinary Medical Officer, U.S. Department of Agriculture, Richmond, VA
2012 – 2014  Research Fellow, National Center for Emerging and Zoonotic Infectious Diseases, U.S. Centers for Disease Control and Prevention, Atlanta, GA
2014 – 2016  Contractor, U.S. Centers for Disease Control and Prevention, Atlanta, GA
2011 – 2012  Veterinarian, General Practice, Trenton Animal Hospital, Trenton, FL
2009 – 2011  Veterinarian, Emergency and Critical Care, Affiliated Pet Emergency Services, Gainesville, FL
2007 – 2009  Veterinarian, Emergency and Critical Care, Veterinary Emergency and Specialty Center, Santa Fe, NM

Relevant Publications


Synergistic Activities
Member of the One Health Surveillance Working Group of the International Society for Disease Surveillance, and the Network for Evaluation of One Health, a European organization dedicated the development of tools for quantitative evaluation of One Health activities and programs. The current research program applies prospect theory to address and quantify decision makers’ motivations and attitudes towards investment in One Health Surveillance activities, while addressing organizational complexities, such as perceived barriers, risk-related attitudes, and underlying drivers of decision-making to the facilitation or impediment of operationalizing One Health activities among government agencies.

Developed the semi-quantitative One Health Zoonotic Disease Prioritization Tool that is currently in use by the CDC globally, as part of the Global Health Security Agenda’s Zoonotic Disease Action Package. The tool applies multi-criteria decision making to assist Ministries of Health and Agriculture in the joint prioritization of zoonotic diseases for prevention, detection, and response. Rist continues to consult with CDC on the use of the Tool, and engages VMCVM DVM students to learn about its application through simulated workshops in the Advanced Veterinary Public Health course.

Working with Johns Hopkins School of Public Health, Stanford University, Institute Pasteur, and PIVOT, an NGO dedicated to health systems strengthening in Madagascar, to deploy a regional dried blood spot sampling program for improved tuberculosis diagnostics.

Rist developed the One Health Clerkship in the Center for Public and Corporate Veterinary Medicine, which allows DVM students in the VMCVM to learn about the integration of One Health into government agencies, including the One Health Office at CDC and the One Health Coordination Center at USDA, and to work on projects associated with the agencies’ current activities.

Collaborators
Kathy Alexander, Virginia Tech
Sofia Arriola, CDC
Matthew Bonds, Harvard Medical School (postdoctoral sponsor)
Cara Brooks, Princeton University
Andres Garchitorena, Harvard Medical School
Thomas Gillespie, Emory University (postdoctoral sponsor)
Purvesh Khatri, Stanford University
Kevin Kochersberger, Virginia Tech
Niaina Rakotosamimanana, Institut Pasteur, Madagascar
Calistus Ngonghala, University of Florida
Ann Miller, Harvard Medical School
Ranto Ramananjato, Ministry of Statistics, Madagascar
Carol Rubin, retired (formerly CDC)
Patricia Wright, Stony Brook University

Current advisor to 3 dual degree DVM/MPH students and 30 students in the public/corporate track students in the DVM program
Stephen H. Schoenholtz  
Director and Professor  
Virginia Water Resources Research Center and  
Department of Forest Resources and Environmental Conservation  
Virginia Tech  
Phone (540) 231-0711; Fax (540) 231-6673; Email Stephen.Schoenholtz@vt.edu

A. Professional Preparation  
Pennsylvania State University  Forest Science  B.S. with Distinction, 1979  
Pennsylvania State University  Biology  B.S. with Distinction, 1979  
Virginia Tech  Forest Biology  M.S. 1983  
Virginia Tech  Forest Soils  Ph.D. 1990  
Virginia Tech  Restoration Ecology  Postdoc. 1990

B. Appointments  
Virginia Tech, Blacksburg, Virginia  
Virginia Water Resources Research Center, Director, 2006-Present  
Department of Forest Resources and Environmental Conservation, Professor, July 2006 to Present  
Oregon State University, Corvallis, Oregon  
Department of Forest Engineering, Resources, and Management, Associate Professor, Professor, 2001-2006, Courtesy Professor, 2006-2012  
Mississippi State University, Mississippi State, Mississippi  
Department of Forestry, Assistant Professor, Associate Professor, Professor, 1990-2001, Adjunct Professor, 2001-Present  
Mississippi Water Resources Research Institute, Director, 2001  
New Zealand Forest Research Institute, Rotorua, New Zealand  
Soil and Site Productivity Research Group, Visiting Senior Research Fellow, January-July 1998 and January-February 2015  
Virginia Tech, Blacksburg, Virginia  
Department of Crop and Soil Environmental Sciences, Postdoctoral Research Associate 1990  
Texas Forest Service, College Station, Texas  
Staff Forester II, 1984-1986  
Columbia University, Palisades, New York  
Lamont-Doherty Earth Observatory, Tree-Ring Laboratory, Research Assistant, 1983-1984

C. Recent Relevant Refereed Journal Publications  


D. Grants and Contracts Received

- Virginia Tech -- $3,030,000 for my individual research program
  - Administer annual budget for Virginia Water Resources Research Center of $750,000-$1,000,000
- Oregon State University -- $1,164,000 for my individual research program
- Mississippi State University -- $2,198,000 for my individual research program

E. Graduate Students and Post-docs Supervised

- Virginia Tech – 8 MS 5 PhD 2 Post-docs
- Oregon State University – 9 MS 3 PhD
- Mississippi State University – 13 MS 2 PhD

F. Synergistic Activities

- Coordinated development and now oversee new interdisciplinary B.S. degree program in Water: Resources, Policy, and Management, Virginia Tech.
- *National Institutes for Water Resources*, President-Elect 2015-2016, President 2016-2017
- *Soil Science Society of America*, Former Chair, Forest, Range, and Wildland Soils Division
- *American Water Resources Association, Ad Hoc* Science Advisory Council member
- Testified on behalf of the Mississippi State Univ. Forest and Wildlife Research Center before U.S. House of Representatives Subcommittee on Forests and Forest Health
- Organizing Committee, 10th, 12th, and 13th North American Forest Soils Conferences
- Committee Chair, Virginia Department of Environmental Quality Academic Advisory Committee
- International water-resources service activities in Armenia, Chile, Costa Rica, New Zealand, Sweden
Hannah Scherer
Assistant Professor and Extension Specialist, Virginia Tech, (540) 231-1759, hscherer@vt.edu

PROFESSIONAL PREPARATION

Ph.D.  Geological and Environmental Sciences  Stanford University  2006
B.A.  Geology  Macalester College  2000

APPOINTMENTS

2015-Present  Assistant Professor and Extension Specialist, Agricultural, Leadership, and Community Education, Virginia Tech, Blacksburg, VA
2011-2015  Research Assistant Professor, Agricultural, Leadership, and Community Education, Virginia Tech, Blacksburg, VA
2008-2011  Science Teacher, Springstone Community High School, Lafayette, CA

RELATED UNDERGRADUATE AND GRADUATE COURSES TAUGHT

- Foundational Science Education Concepts for Agricultural Education (ALCE 5814), 2016
- Teaching & Training Methods in Ag & Life Sciences (ALCE 4244), 2015, 2016, 2017
- Ecological Agriculture: Theory and Practice (co-taught, ALS 3404), 2013, 2014

SYNERGISTIC ACTIVITIES

1. Program Director, Virginia Tech Graduate Extension Scholars program. I secured funding to develop and implement this program (2014-16), which provided STEM graduate students in the College of Agriculture and Life Sciences the opportunity to work with youth educators to develop an educational module based on their research. Through the program, they learned how to develop high quality outreach programs that expanded youth awareness of and interest in STEM research opportunities in agriculture.

2. Course development: STEM Integration in Agricultural Education. I developed and teach this Master’s level course at Virginia Tech to support in-service secondary agriculture teachers and 4-H youth development agents in their efforts to emphasize STEM content standards in their programs. Best practices for STEM teaching and learning are taught in the context of the unique challenges facing educators and students in agricultural education programs.

3. Curriculum Module Author, A Growing Concern: Sustaining soil resources through local decision making. This module was selected by project leadership of Interdisciplinary Teaching about Earth for a Sustainable Future (InTeGrate), an NSF STEP Center. I worked collaboratively with a team of 3 faculty to develop, pilot, and publish a soil science teaching module using sustainable agriculture as a context. The module implements best practices for post-secondary science teaching and learning through a student-centered approach. The module was published in October, 2014.

4. Secondary agriscience outreach activities. I am involved in supporting secondary student agriscience research at the state and national level. I have served on the National FFA Agriscience Committee, which is responsible for planning and implementing the national
Agriscience fair competition, including advising the National FFA on judging rubrics, competition rules, and teacher professional development materials. At the state level, I led a team that secured funding for development and implementation of a new 4-H and FFA Agriscience Research Poster Contest at the State Fair of VA in 2013. As superintendent, I am responsible for providing leadership for the contest, including development of judging rubrics and contest rules, and developing and delivering professional development opportunities for educators.

5. **Member, SDC343 Multistate Project: A model for secondary schools agriscience education programs that emphasizes the STEM content in agriculture.** This multi-state effort will streamline and focus research in agriscience education and allow for longitudinal data and replication of studies across the United States. The successful completion of this research project will allow agricultural educators to have an increased awareness of the practices, cross-cutting concepts, and disciplinary core ideas included in a successful agriscience program. This increased awareness will be accompanied by modified curricula to guide secondary agriscience teachers in the highlighting of STEM concepts and ideas through articulated competencies.

**SELECTED PUBLICATIONS**

* denotes former/current students, **denotes outreach training program participants

**Refereed Journal Articles**


**Papers in refereed conference proceedings**


**Digital scholarship**

Biographical Sketch for Peter M. Sforza

Professional Preparation
Virginia Tech  Blacksburg, VA  Biology (Cum Laude)  B.S., 1997
Virginia Tech  Blacksburg, VA  Plant Pathology, Physiology, and Weed Sci.  M.S., 2004

Appointments
Note: CGIT = Center for Geospatial Information Technology; PPPWS = Plant Pathology, Physiology, and Weed Science
Virginia Tech, CGIT  Director and Research Scientist  2009-present
Virginia Tech, Geography  Affiliated teaching faculty  2008-present
CAICI-Athena  Geospatial Intelligence Analyst  2012-2013
Virginia Tech, PPPWS  Research Associate  1998-2004
Virginia Tech, Chemistry  General Chemistry Recitation Instructor  1997-1998

Products
(i) Products closely related to proposed project

(ii) Other significant products

**Synergistic Activities**

1. As a faculty member at Virginia Tech since 1998, Peter has successfully worked across multiple colleges and disciplines to cultivate interdisciplinary collaborations to develop insights and innovations for complex problems including a broad range of geospatial application domains including agriculture, broadband, facilities management, hazard assessment, transportation, safety and security, community resilience, health, energy, biotic and abiotic modeling, multi-criteria decision support systems, optimization, 3-D spatial data infrastructures, interoperability, crowdsourcing, data mining and visualization techniques.

2. Visualization, informatics, and 3D spatial data infrastructures are the main foci for research programs. Peter has led the development of multiple platforms and integrated processes with the VT Advanced Research Computing, Enterprise GIS, and various information technology assets to develop a world class computational infrastructure and research program. Current research platforms include an Integrated Broadband Toolbox featuring a crowd sourced vertical assets inventory, map books, RF propagation models, microwave transmission corridor modeling, and telecommunications policy database to support planning and analysis.

3. Peter is the lead researcher on Eastern US Vineyard Site Assessment, a macro and meso-scale multi-criteria decision analysis using soil, climate, topography, and land cover for 19 states. For global mapping and modeling, CGIT has developed the Global Agroclimate Analysis Tool.

**Collaborators and Other Affiliations**

*(i) Collaborators*

Erica Adams, Booz Allen Hamilton; Matt Bock, Virginia Tech (VT); David Carroll, VT; Bill Carstensen, VT; Imed Dami, Ohio State; Thomas Dickerson, VT; Mary Beth Dunkenberger, VT; Drew Ellis, VT; Brian Farrell, VT; John Fike, VT; Greg Frey, VT; Ralph Hall, VT; Kathleen Hancock, VT; Brandon Herndon, VT; Ji-Sun Kim, VT; Alan Lakso, Cornell; Azam Moosavi, VT; John Munsell, VT; Joseph Newman, VT; Mizuho Nita, VT; Chris North, VT; Matt Pierson, VT; Nicholas Polys, VT; Peter Radics, VT; Laura Roghair, VT; Kyle Schutt, VT; Nikita Sharakhov, VT; Jason Shelton, VT; Venkataramana Sridhar, VT; Chris Teutsch, VT; Eric Vance, VT; Justine Vanden Heuvel, Cornell; Emily Van Houweling, VT; Haitao Wang, VT; Sophie Wenzel, VT; Tony Wolf, VT.

*(ii) Advisors*

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
</tr>
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<tbody>
<tr>
<td>Erik Stromberg</td>
<td>Virginia Tech</td>
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<tr>
<td>Dan Brann</td>
<td>Virginia Tech</td>
</tr>
<tr>
<td>Roger Youngman</td>
<td>Virginia Tech</td>
</tr>
</tbody>
</table>

*(iii) Advisees*

Graduate students (1): Sunshin Lee
Venkataramana Sridhar, Ph.D., P.E., D.WRE
Assistant Professor, Biological Systems Engineering Department,
Virginia Tech, Blacksburg, Virginia 24061
Tel: (540) 231-1797; Fax: 540-231-3199; E-mail: vsri@vt.edu

(a) Professional Preparation

<table>
<thead>
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<th>Location 1</th>
<th>Major 1</th>
<th>Degree 1</th>
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<tr>
<td>Tamil Nadu Agricultural Univ.</td>
<td>Coimbatore, India</td>
<td>Ag Engineering</td>
<td>B.S., 1991</td>
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<tr>
<td>Asian Institute of Technology</td>
<td>Bangkok, Thailand</td>
<td>Irrigation Engineering</td>
<td>M.Eng., 1994</td>
</tr>
<tr>
<td>Oklahoma State University</td>
<td>Stillwater, OK</td>
<td>Biosystems Engineering</td>
<td>Ph.D., 2001</td>
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(b) Appointments

<table>
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<th>Position 1</th>
<th>Institution 2</th>
<th>University 2</th>
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<td>2014-Present</td>
<td>Biological Systems Engineering</td>
<td>Virginia Tech</td>
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<tr>
<td>2012-2013</td>
<td>Civil Engineering</td>
<td>Boise State University</td>
<td></td>
</tr>
<tr>
<td>2007-2012</td>
<td>Civil Engineering</td>
<td>Boise State University</td>
<td></td>
</tr>
<tr>
<td>2003-2007</td>
<td>School of Natural Resources</td>
<td>U. Nebraska</td>
<td></td>
</tr>
<tr>
<td>2001-2003</td>
<td>Civil and Environmental Engineering</td>
<td>U. Washington</td>
<td></td>
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</tbody>
</table>

(c) Select Publications

i. Five Related Publications


ii. Other Relevant Publications


(d) Synergistic Activities

1. Providing leadership with ICTAS Center in India in the water sector through collaboration with colleagues (Lohani, Pruden and others), the Lower Mekong Basin (Cambodia, Thailand, Lao, Vietnam) for food-energy-water nexus impacted by hydropower development projects.

2. ITRA-Water, Government of India, Review Panel Member to review five major water projects funded across India from 2013 to 2016.


5. Review Panel Member, Horton Award Committee, American Geophysical Union, 2009-12.

Total number of students mentored/advised: 8
Sophie G. Wenzel, MPH
Associate Director, Center for Public Health Practice and Research
Department of Population Health Sciences
Virginia-Maryland Regional College of Veterinary Medicine, Virginia Tech
http://www.vetmed.vt.edu/people/bios/wenzel.asp

Professional Preparation

Georgetown University          Linguistics and Spanish        BSLI, 1998
Emory University               International Health          MPH, 2004
University of Illinois at Chicago Public Health Leadership DrPH, expected 2018

Appointments

2016-present  Associate Director, Center for Public Health Practice and Research, Virginia Tech University, Blacksburg, VA
2013-2016     Assistant Director, Center for Public Health Practice and Research, Virginia Tech University, Blacksburg, VA
2013          Public Health Consultant, Virginia Department of Health- New River Health District, Christiansburg, VA
2008-2012     Adolescent Health Program Manager, Alaska Division of Public Health, Anchorage, AK
2005-2008     Public Health Prevention Specialist, Centers for Disease Control and Prevention
                Assignments:  2006-2008 State of Alaska Section of Epidemiology, Anchorage, AK
                2006          Division of Violence Prevention, Atlanta, GA
                2005          Division of Global Migration and Quarantine, Atlanta, GA
                Dec. 2005     Dengue outbreak investigation, Matamoros, Mexico/Brownsville TX
2004-2005     Prevention Advocate, Alle-Kiski Area Hope Center, Tarentum, PA
2003-2004     Research Intern, Georgia Campaign for Adolescent Power and Potential, Atlanta, GA
2003-2004     Research Intern, Centers for Disease Control and Prevention, Atlanta, GA
2001-2002     Volunteer Coordinator, United States Peace Corps, Asuncion, Paraguay
1999-2001     Volunteer, United States Peace Corps, Villa Boqueron, Chaco, Paraguay

Products most closely related to proposal


**Other products**


**Synergistic Activities**

Ms. Wenzel has significant experience leading, implementing, developing, and evaluating public health projects in Paraguay, Mexico, Burkina Faso, the continental US, and Alaska. Ms. Wenzel's research and professional interests include maternal child and adolescent health, youth risk behaviors, international health, sexual and reproductive health, healthy eating/active living, community engaged research and participatory methods, and evaluation of public health programs. Ms. Wenzel has designed and conducted both process and outcome evaluations. She has designed and conducted qualitative research projects, assisted in the design of a randomized controlled trial, and has experience with several sampling methodologies.
Appendix II: Figures

Figure 1: Functional Software Stack: Models-as-a-Service (MaaS)
Figure 2: Virtual Decision-Support and Learning Environment
Appendix III: Provisional Job Ads

The following text describes the areas where new faculty could be hired at the interface of critical intersecting disciplines. The first three positions focus on faculty who would be needed to help develop the envisioned next-generation open data fusion platform.

- **Faculty Position in Science Education** (CLAHS). This position requires an academic and research background at the intersection of K-12 education, global sustainability studies, and emerging virtual learning technologies. Applicants with a strong background in STEM education, culture and equity studies, and curriculum and assessment in virtual learning environments are preferred.

- **Faculty Position in Community Computing** (COE). This position requires an academic and research background that can leverage the Human-Computer Interaction (HCI) approach to computer science with special emphasis on the role of user interfaces and mobile graphics to increase accessibility and community communications.

- **Faculty Position in Information Services** (COE). This position requires an academic and research background that is focused on the methods of server-side systems integration that will support Models-as-a-Service (MaasS), including issues of data access, validation, and quality of service over the Web.

- **Faculty Position in International Agricultural Systems Education** (CALS). This position requires an academic background and professional experience in community-based outreach and extension education in a global agricultural context. Applicants with a strong background and record of publication addressing interdisciplinary and systems-level agricultural issues and research questions (e.g., climate smart agriculture, agroecology, global food security, water sustainability) in both developed and developing countries are encouraged to apply. Experience in participatory research and evaluation methods and approaches will be given preference.

- **Faculty Position in One Health Surveillance** (VMCVM). One Health Surveillance (OHS) can be defined as the collaborative, on-going, and systematic collection and analysis of data from multiple domains to detect health related events and produce information that leads to more effective, evidence- and system-based health interventions in human and animal populations, and in support of sustainable ecosystems. This position requires an academic and research background in human and animal health systems, with experience in designing integrated information systems that use data from multiple sectors and sources. Applicants with a clinical degree (DVM or MD) and advanced training in informatics, computer science, or other related field are preferred.

- **Faculty Position in Environmental Health GeoSystems** (COS). Environmental Health GeoSystems occur where Earth system processes converge with anthropogenic processes to impact ecological, agricultural, and/or human health. Faculty candidates are expected to use or develop any combination of laboratory, field, modeling, or geospatial methods to address fundamental science questions at the intersection of near-surface geological processes and human health. Ideal candidates will have broad, interdisciplinary experience with a combination of geological, biological, or clinical training. The candidates will understand how global science perspectives and interdisciplinary convergence support informed decision-making, as well as the impacts of natural and anthropogenic processes on human health, socio-economic stability, natural resource sustainability (e.g., soil, air, water), and agricultural productivity.

- **Faculty Position in Medical Anthropology/Community Health** (VMCVM/Population Health Sciences). This position requires an academic and research background with significant on-the-ground experience engaging communities in Africa. Applicants with a strong background in community engagement, community-based participatory research methods, and an ability to incorporate community knowledge into scientific research endeavors are preferred.

- **Faculty Position in the Water Policy and Governance** (CAUS). This position requires an academic and research background at the intersection of water policy and governance, decision science, and data visualization. Applicants with significant international experience in water systems in Africa are encouraged to apply.