Securing a Bright Future for the Arts and Advanced Networking

In 2000, Internet2 launched an experiment - what might artists and humanists do with advanced networks were they to understand the capabilities available to them? The very first request from this constituent group in the U.S. was to collaborate with their European partners and scholars, who we learned were engaging in similar explorations with advanced networks in the arts - hence began a long and wonderful collaboration between the Internet2 and GÉANT communities. To build on expertise garnered through multiple projects involving partners in the U.S. and Europe, these two communities have collaborated to offer the Network Performing Arts Production workshop (NPAPW) series, alternating host locations between the U.S. and Europe.

The purpose of this series of workshops is to facilitate outreach to new user communities in the arts and humanities areas, particularly by demonstrating the use of research networks in supporting real-time musical, dance and artistic performances. In addition to building a community with specific requirements in terms of bandwidth, network reliability, jitter and latency, the workshops demonstrate the use of specific audio, video and lighting techniques, tools and applications to support teaching, auditions and remote performances. Finally, the workshops provide opportunities for collaboration among institutions across NRENs, GÉANT, Internet2 and other intercontinental research networks. Former European NREN sponsors have included GARR, Renater, redIRIS, CESCA, ACONet, Jisc, with the 2017 offering of the workshop to be hosted at the Royal Danish Academy of Music with support from GÉANT and DeiC.

While we all agree these collaborations and workshops have been a great success, we also find ourselves wondering how we can ensure a bright future for these initiatives so thoughtfully invented by and playing to the strengths of U.S./European community.

Notably, efforts in developing low-latency services for the performing arts are technically related to low-latency efforts in support of large data transfers and real time application services for scientific research. In order to be successful, a real-time collaboration session using LOLA requires a
very reliable and efficient network service and the same can be said for very high-speed/low-latency scientific applications. As the needs of coherent global networking progress beyond network architecture to network capability, in support of science initiatives, and as funding sources are identified to support science researchers, these endeavors could be extended to and also supported by performing arts initiatives requiring low-latency end to end performance. After all, panelist Claudio Allocchio, who led the LOLA development team, was also involved in developing the LEP collider (the Large Hadron Collider predecessor) and in the IETF development efforts of real time communication services.

This panel will explore and seek commitment from the community for ongoing technical support for overlapping science and arts requirements for low-latency end to end performance, for specific successes such as LOLA, and for future goals for connecting performing arts education institutions and venues across Europe, the U.S. and, increasingly, with active partners in Asia, the Caribbean, Africa and India. Panelists will outline technical requirements for ongoing success, costs and possible sources of funding, political challenges and solutions, and a compelling vision for why these endeavors matter to all of us in the research and education community which vitally includes our performing artists, humanists, scientists and students.

Panelists:

**Ann Doyle, Internet2: Introduction and Moderator (in-person)**
Ann Doyle is the primary relationship manager for Internet2’s midwest and east coast university members, assessing the needs of institutions to inform Internet2’s mission and goals. She founded and continues to lead Internet2's cultural initiatives working with U.S. and international partners utilizing advanced networks for collaborative live performances, master classes, and remote auditions in the performing arts. Ann has a Master's degree in Higher Education Administration from the University of Michigan.

**Claudio Allocchio, GARR: LOLA future support and funding, models to sustain future innovations. (in-person)**
Claudio Allocchio studied astrophysics and particle physics, but also music (piano). In 1985 he started his computer networking activities at CERN and
then returned to Trieste (1988). Among the founders of GARR NREN, he managed the COSINE mail gateway services (early 90s) and the Italian Naming Authority (".it" regulator) where he served as a president for 11 years.. Since 1991, he is a member of the application area directorate at IETF and was the area coordinator until 2015. He is the GARR senior technical director for advanced applications and security areas. He is one of the developers of the LOLA a/v system.

Jim Bottum, Internet2: NSF funded research support models. (remote/in-person?)

James R. “Jim” Bottum currently serves as the Founding Director of the Center of Excellence in Next Generation Computing and Creativity and as a Research Professor in the Department of Electrical and Computer Engineering at Clemson University and also as Internet2’s Inaugural Presidential Fellow. In the latter capacity, he is helping to initiate a comprehensive research engagement program focused on members’ campus cyberinfrastructure.

Previously, Bottum was Vice Provost and Chief Information Officer for Computing and Information Technology at Clemson University since July 2006, and served in that capacity until August 2016. He led Clemson’s efforts to build a state-of-the-art cyberinfrastructure for education, research and service. These efforts resulted in Clemson becoming a Top 100 supercomputing site in the world, linking Clemson to the national research infrastructure and bridging academia and IT staff together on innovative initiatives.

Before coming to Clemson University, Bottum was Purdue University's first CIO beginning in August of 2001. Prior to arriving at Purdue, Bottum was the Executive Director for the National Center for Supercomputing Applications (NCSA) at the University of Illinois at Urbana-Champaign.

Bottum is the Principal Investigator on the national Advanced Cyberinfrastructure Research and Educational Facilitation (ACI-REF) Project (NSF Award #1341935), a $5.3 million award to enable a national network of Advanced Cyberinfrastructure Research and Education Facilitators (ACI-REFs) to broaden the impact of advanced computing resources at 6 member campuses. This has also resulted in an NSF Research Coordination Networks program, entitled the Campus Research Computing Consortium (CaRC), made up of 28 campuses from around the nation to provide a
national forum for the exchange and dissemination of best practices, expertise and technologies, enabling the advancement of campus-based research computing activities. Further, Bottum also serves as an Expert for the National Science Foundation since early 2016.

Marianne Jakobsen, The Royal Danish Academy of Music: The future of advanced network enabled global distance learning and performance. (maybe in-person)
Marianne Løkke Jakobsen, The Royal Danish Academy of Music, Copenhagen, DENMARK
Director of International Affairs, Director of Music Confucius Institute
Member of RDAM distance learning development team

Educational background; Master in Musicology/ French, and diploma degree in Leadership and Guidance. Marianne has been employed by the Royal Danish Academy of Music since 2000. In 2002 she was head of Study administration. In 2004 she was appointed Director of International affairs and Guidance. Since 2012 Marianne has been fully engaged in the establishment of the world's first Music Confucius Institute (MCI) in cooperation with the Central Conservatory of Music in Beijing. Marianne has been appointed member of Council of State Education under the ministry of Education and Science. She is board Member of The Danish Cultural Institute and by the Ministry for Culture she is appointed board member of Branding Danish Higher Educations. Marianne has initiated development projects related to emerging American and Chinese market, quality assurance procedures, Nordic and European networks, international distance learning projects, competence development projects for academic staff, international cooperation projects in relation to music performance and higher music education development.

Tania Lisboa, The Royal College of Music: The future of advanced network enabled global distance learning and performance. (maybe in-person)
Tânia Lisboa joined the RCM in September 2001 as a Research Associate in the CPS and was appointed Research Fellow in 2008. She also holds the post of Artistic Research Fellow at the Orpheus Institute in Belgium.
Following her MA in performance studies at City University London, her doctoral research at Sheffield University employed longitudinal studies with young cellists to investigate the relationship between musical understanding and a multi-modal approach to teaching and learning. Her current research focuses on the investigation of musical movement and practice strategies. She is a regular contributor to international conferences, giving papers on performance, music psychology, and music education.

Since 2003, Tânia has been the manager of the RCM's videoconferencing programme. Recent activities in this area include links with the Eastman School of Music and the Cleveland Institute of Music in the USA, as well as with universities and primary and secondary schools in the UK.

In parallel with her academic research, she pursues an active career as a solo cellist. A native of Brazil, where she also trained as a pianist, her concert engagements encompass Europe, Asia, and North and South America. In addition to the standard repertoire, she has recorded the complete works for cello and piano and all the piano trios of Villa Lobos for Meridian Records.

**Justin Trieger, New World Symphony: Innovation, workshops, MUSAIC.**
(remotely)
Justin Trieger is the Technical Director of Distance Education & New Media Initiatives at New World Symphony. He has hosted remote master classes across the globe, been at the core of innovation in the networked performing arts world, and has served as host of the U.S. offering of the Network Performing Arts Production Workshop (NPAPW).

**Sigita Jurkynaite, GÉANT, Global Network Performing Arts Portal (in-person)**
Sigita Jurkynaitė is a Project Management Assistant at the Amsterdam office of GÉANT - formerly TERENA - which she joined in May 2014. Since then, together with GÉANT Project Development Officers, Sigita worked on a variety of projects in different areas, including security (TF-CSIRT, TCS), AAI (AARC) and Culture (Network Performing Arts).
Sigita has a BA Music Technology degree from the University of Bedfordshire and BA Liberal Arts and Sciences, majoring in Film and Literature studies, from the Amsterdam University College. She completed part of her second degree at the University of Toronto, focusing on Slavic languages and culture.