The Networked Performing Arts Scene

Ann Doyle, Internet2
Claudio Allocchio, GARR
March 12, 2013
University of Music and Performing Arts Vienna
Danke Schön!!
Key participants

• on Internet2
  • U.S. University Members – Departments of Music, Dance, Art, English, History, etc.
  • Affiliate Members – Berklee College of Music, Cleveland Institute of Music, Library of Congress, Manhattan School of Music, New World Symphony, The Philadelphia Orchestra, and others.
  • Industry Members – Polycom Worldwide
  • USC Shoah Fondation Institute, EVIA Ethnomusicology repository, C-SPAN and Research Channel video archives, etc.
Key participants

- on European NRENs
- EU Universities – Departments of Arts, Literature, History, Music Conservatories, Arts Academies, Theaters, Museums, Libraries, Digital Archives, etc.
University of Trinidad & Tobago
Northern Illinois University
Janet (UK) offices

CKLN launch!!
New World Symphony
Michael Tilson Thomas / Luigi Alberto Bianchi

photo by R. Andrew Lepley
TCU School of Music
Harold Martina & Jose Feghali

Conservatorio G.Tartini
Teresa Trevisan & Flavio Zaccaria
UbiquiLab 1

Rome - Cassino
Laboratory of Ubiquitous Presence
GÉANT Launch Event

Volcano Dance
Chattanooga Riverside Festival
live with L.A.
GARR-ARNES Cross Border Fiber Opening
Jazz Jam Session
...much more...

- Catalunia Laptop Orchestra
  - [http://barcelonalaptoporchestra.blogspot.com](http://barcelonalaptoporchestra.blogspot.com)
- Anella Cultural Catalunia
- East15 Acting School UK
  - [http://www.east15.ac.uk/](http://www.east15.ac.uk/)
- Scottish Symphonic Orchestra Children Education
  - [http://www.bbc.co.uk/scotland/music/bbcssso](http://www.bbc.co.uk/scotland/music/bbcssso)
- Emeroteca Digital
  - [http://hemerotecadigital.institutdelteatre.cat/](http://hemerotecadigital.institutdelteatre.cat/)
- Bologna University: Centro Musica e Spettacolo (MUSPE)
  - [http://www.muspe.unibo.it/attivita/cimes/](http://www.muspe.unibo.it/attivita/cimes/)
- University for Music and Performing Arts, Vienna
  - [http://www.mdw.ac.at/?pageid=1](http://www.mdw.ac.at/?pageid=1)
...much more...

- Joseph Haydn Konservatorium, Eisenstadt, Austria
  - http://www.haydnkons.at/

- The Royal Academy of Music, Aaraus, Denmark

- Napier University, School of Music, Edunburgh, UK
  - http://www.napier.ac.uk/sci/Pages/mus.aspx

- Conservatorio Licinio Refice, Frosinone, Italy
  - http://www.conservatorio-frosinone.it/

- Università del Lazio Meridionale, Cassino, Italy
  - http://www.unicas.it/

- ...
Technology options
DVTS: What is it?

- “Open source” software developed by the WIDE Project (i.e. it’s free!)
- Sends firewire source over Internet with no additional compression
- Replaced $30,000 hardware
DVTS: Vital Stats

• Latency: Good enough for conversation
• Quality:
  • Audio: 48kHz/16 bit uncompressed
  • Video: Standard definition, DV25 compression
• Bandwidth: 30 Mbps
• Challenge: echo… echo… echo!!
ConferenceXP (CXP)

- Independent Audio/Video handling
  - (un)compression, codec, source, output
- Multiple audio/video channels
- Network and CPUs Challenging?
  - unicast, multicast, from 2Mbps up to ... infinity, CPU overflows

Courtesy by Justin Hourigan (HEAnet)
Ultragrid

- High Definition Video with an affordable solution
- ... and sometimes artifacts are part of the “art”
- Minimum 1Gig bandwidth

![Image of a computer screen with a video feed]
EchoDamp

- A multi-channel audio mixer and echo controller for high-bandwidth musical videoteleconferencing
- Uses a dynamics-based algorithm rather than a frequency-based one (like Acoustic Echo Cancellation) to preserve the full frequency range of the audio signal
- Intuitive and easy-to-use controls work with any 4X4 (or larger) audio interface that supports CoreAudio on the Macintosh or MME, DirectSound, or ASIO on the Windows platform
- Available free to non-profit educational and performing arts institutions at http://echodamp.com
EchoDamp collaborators

• Created by Brian Shepard, Assistant Professor of Pedagogical Technology, University of Southern California Thornton School of Music

• Internet2 community members helped test to ensure system’s readiness for production. Critical testers included:
  • **Scott Deal**, Professor and Associate Director of Music Research Programs, IUPUI (Indiana University Purdue University Indianapolis);
  • **Ben Fineman**, System Administrator, Internet2;
  • **Dan Nichols**, Head of Recording Services and Internet2 Multimedia Specialist, NIU (Northern Illinois University);
  • **Justin Trieger**, Internet2 Systems Manager, New World Symphony
Polycom™ VSX 7000, 8000, 9000

- Hardware solution
- Very easy user interface
- Echo solution built in
- 2Meg – 8Meg
- Live Music Mode
LOLA
LOw LAtency Audio Visual Streaming System

The Dream...

...at the GARR Conference 2005, in Pisa...
Masterclass with NWS in Miami

To perform together, from distant locations...
LOLA
LOw LAtency Audio Visual Streaming System

The Reality...

November 2010 – two pianists performed Bach duet together from Trieste to Paris
The LOLA team

**Production**

Conservatorio di musica G. Tartini - Trieste

**Implementation**

Paolo Pachini: general coordination

Carlo Drioli, Stefano Bonetti: programming

Nicola Buso: testing and musical advice

Claudio Allocchio (Consortium GARR): testing and networking advice

Massimo Parovel: conception and supervision

... and a long list of musicians now!
The Workshops

@ New World Symphony, Miami Beach

@ European Locations (Trieste, Paris, Barcelona, Vienna!)
Network Performing Arts Production Workshop - History

- March 2003 -- New World Symphony and Internet2 host first annual Performance Production workshop
- May 2005 -- GARR and New World Symphony host demonstration at GARR annual user conference
- May 2006 -- Ann Doyle presents at TERENA, and discussions begin about TERENA hosting in Europe
- 2009 – First European Performing Arts Production Workshop in Trieste, with GARR
- 2010 – Second European Workshop: IRCAM/COMEDIA in Paris with RENATER
- 2011 June – Gran Teatre del Liceu, Barcelona Opera
- 2003 – 2012 - New World Symphony, Miami Beach
- 12-14 March 2013, University of Music and Performing Arts, Vienna
Workshops main Topics

• Technology:
  • DVTS, CXP, LOLA, EchoDamp, Network basics, Monitoring, Lighting, Audio and Video codecs, ...

• Case Studies and examples:
  • Masterclasses, ongoing projects and activities

• Social Networking:
  • discussions about arts and technology use, new collaborations.

Courtesy by Justin Hourigan (HEAnet)
Have a wonderful workshop!
Questions?

Ann Doyle, Internet2
adoyle@internet2.edu

Claudio Allocchio, GARR
Claudio.Allocchio@garr.it