LoLa means Low Latency (and high quality!)

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... somewhere on the net!
How and when LoLa was born...

June 2005: a networked Masterclass between Pisa and Miami: high quality sound and video, but... more than 0.5 second of delay!

“To achieve an effective music teaching, listening to students’ performances in minimal details is not enough: you must be able to play along with them. Can we do this at distance on the network?”:
Massimo Parovel, Conservatorio Tartini Trieste
What do you need to play together?

- latency (delay) less than ~30 milliseconds: 10 meters!
- eyes contact to synchronize
- sound spatial immersion to tune expression and timbre
- to feel the ambience sound response
- to feel the “presence” of the other musicians
- a non distracting environment
- ... and art!
LoLa means

Low Latency

Less than 5 ms

Plus all other needed features
LoLa is NOT:

• a software/App that you download and install
• an online platform where you get an account
• a service you run into a browser
• a service which allows you to connect many sites
• an audio only system

LoLa is:

• a multi-component system that you install in all locations
• state of the art technology to optimize low latency in A/V
• a system which delivers studio quality multichannel audio
• tailored for music/art teaching and rehearsing, but you can also use it for performances and other scenarios
LoLa is made of 3 components

An highly optimized Software

Specialized Hardware (computer & A/V)

A very hi-end Network
LoLa is: good hardware

Hi-end gaming PCs
Multicore (8, 10, 12,...) i7, i9 CPUs
Good Server class NICs
Good GPUs
Fast monitors

Machine vision cameras (no webcam)

Professional audio setups
(microphones, mixers, audio monitors, ...)

Conservatorio
di musica
Giuseppe
Tartini
Trieste

Consortium
GARR
THE ITALIAN
EDUCATION
& RESEARCH
NETWORK
LoLa needs:

1 Gigabit (upload and download) clean, stable service (minimal 100 Megabit)

Research and Education networks are ok, but not everywhere and not for everyone

commercial providers are way back from the required service level

A few Smart “symmetric” GIG-City services are appearing!
Some features of LoLa

A/V Latency: <5ms
Audio: 44/48 Khz 10ch
Video: up to 60 fps HD
Sites: up to 3 locations
Up to 4 cameras

Network: 100 Mbps
1 Gbps (2.5 Gbps)
Distances: up to 3500km
... so to use LoLa I need:

The software (free academic license):

To get the specialized Hardware (computer & A/V)

To connect to an hi-end Network
What do I get from LoLa?

• the sound quality is fully preserved, no manipulations

• the video is fluid (high speed frame rate)

• the system is non invasive, it adapts to the musicians and their instruments (not viceversa)

• musicians (even newcomers) forget about LoLa presence in very few minutes and focus on music

• you may get more details than in physical presence

• you can ask for new features, instead of adapting to what the vendor decides
What can I do with LoLa?

• to play at distance as if we are a few meters away

• to record and reply the performance/piece

• to see the performer/student form 4 viewpoints

• to exchange masterclasses and courses

• to create shared curricula courses

• to easily enable the “collective teaching” model

• to experiment new teaching methods

• to create the future of musica teaching
LoLa partners?
SWING – teaching with LoLa

https://www.garr.tv/stream/5e2ea346879ba9001be40133

https://www.garr.tv/stream/5e2b1b70879ba9001be400c8

https://www.garr.tv/stream/5e4153195d81c9001b718695

(use subtitles if you do not understand German and Slovenian)
More info:

https://lola.conts.it

https://www.swing-project.eu

lola-project@garr.it