AEC - Pop & Jazz Platform 2023

Long distance live performing in ensembles - made possible

PhD. Habil. Associate professor **Dan Spînu**

”George Enescu” National University of Arts - Iași, ROMANIA

Remote rehearsals

isolation in pandemic times

On-line teaching via internet and readily available sotfware

- Messenger, Skype, etc.
- On-line meeting software: Zoom, MS Teams, etc.

Courses based on lecture, auditions	OK
Instrument lessons	not great, but OK
Remote enemble rehearsals, concerts	impossible

Remote rehearsals

isolation in pandemic times

On-line teaching via internet and readily available sotfware

- Messenger, Skype, etc.
- On-line meeting software: Zoom, MS Teams, etc.

Courses based on lecture, auditions	OK
Instrument lessons	not great, but OK
Remote enemble rehearsals, concerts	impossible

LATENCY

Remote rehearsals

isolation in pandemic times

alternative to remote rehearsals/concerts:
Videoclips made by individual recordings, mixing, video editing

- NOT a real ensemble activity
- it completely lacks interactivity
- only songs with steady tempo can be approached

Remote rehearsals

isolation in pandemic times

Are the remote rehearsals still needed?

Remote rehearsals

~~isolation in pandemic times~~

Are the remote rehearsals still needed?

- **YES!** remote teaching programs
- **YES!** for students in isolated, remote areas
- **YES!** for students which cannot travel easily, like those with disabilities
- **YES!** for lowering the costs of music productions

ICMA
Institutul de Cercetare Multidisciplinară în Artă

The Multidisciplinary Research Institute in Art

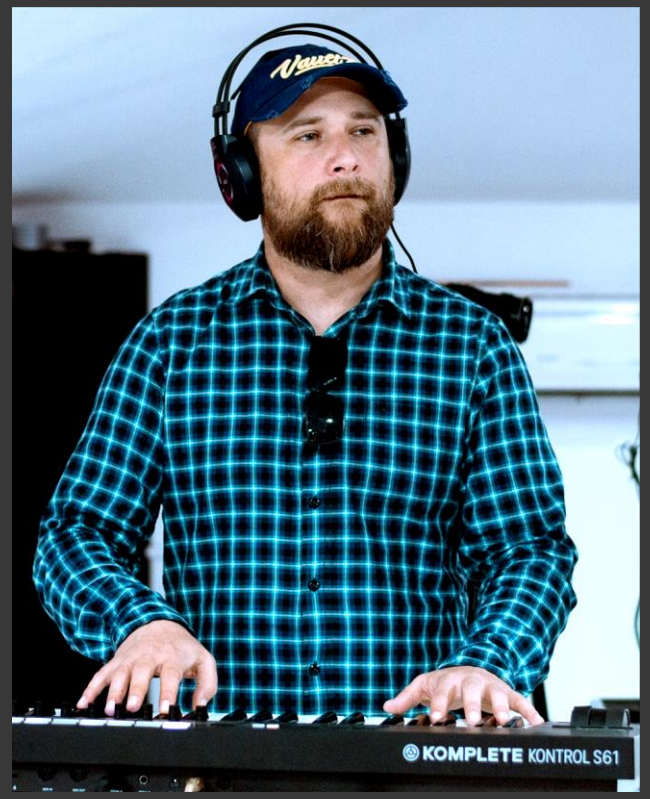
Developing of technical solutions for remote music education programs

The Multidisciplinary Research Institute in Art

Developing of technical solutions for remote music education programs

Dan Spînu - project manager

Dan Arhire - guitar teacher



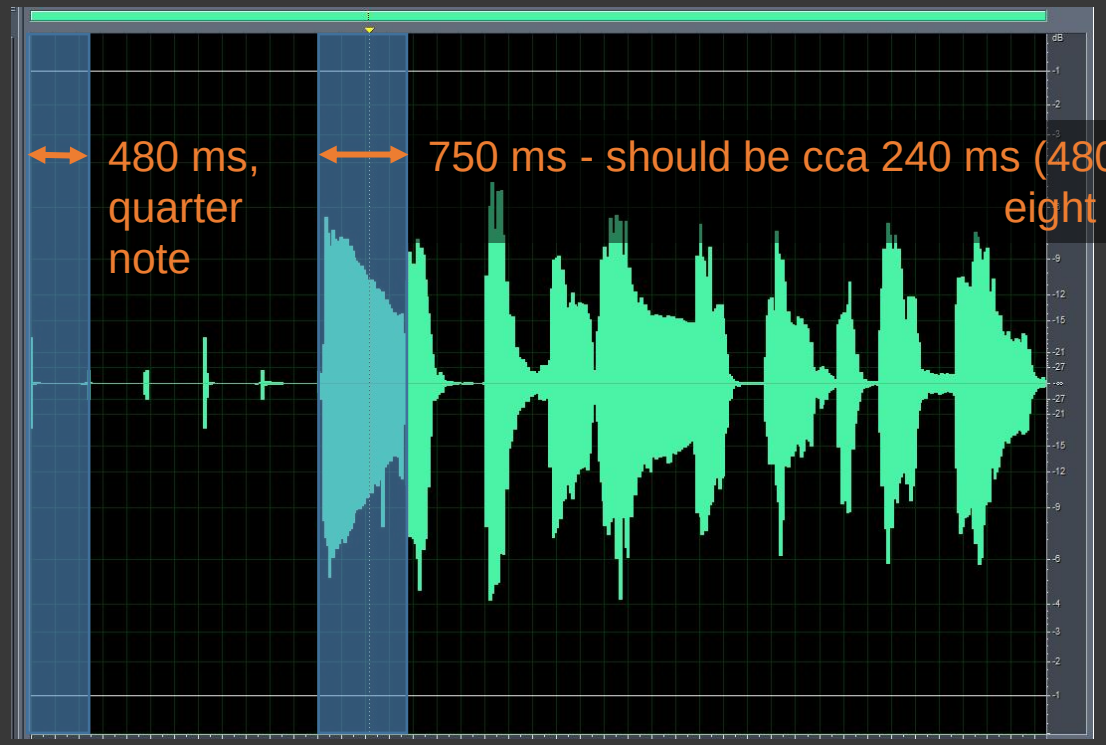
Teodor Amarandei - piano teacher

Developing of technical solutions for remote music education programs

Investigating the technical performance of on-line conference programs (Zoom) + integrated audio interfaces + high speed internet connection

Developing of technical solutions for remote music education programs

Investigating the technical performance of on-line conference programs (Zoom) + integrated audio interfaces + high speed internet connection



Latency ~ 500ms

Developing of technical solutions for remote music education programs

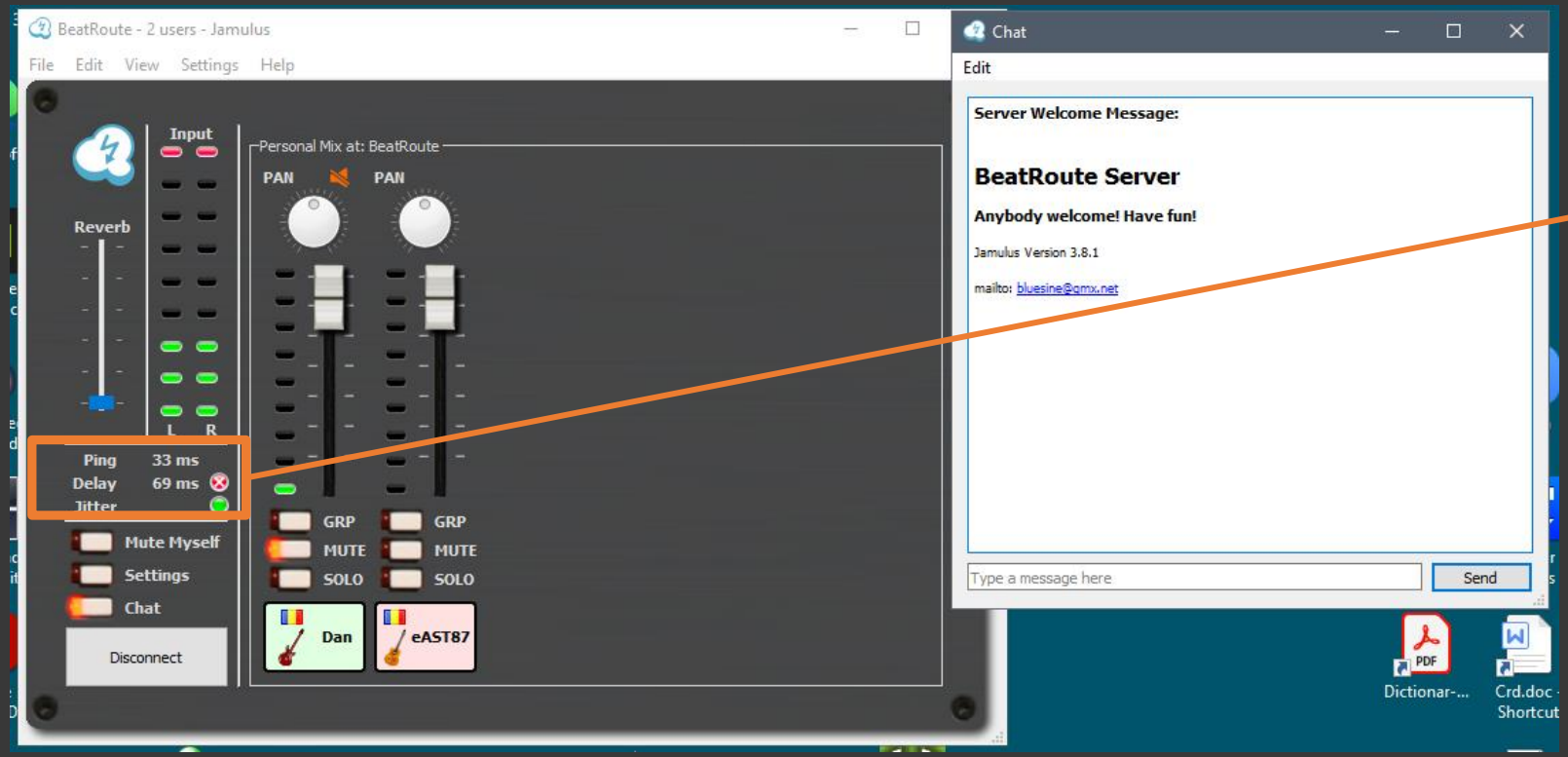
Investigating the technical performance of dedicated software (JAMULUS) + professional external audio interfaces + high speed internet connection

- **ASIO drivers**
- **Optimised software**

Developing of technical solutions for remote music education programs

Investigating the technical performance of dedicated software (JAMULUS) + professional external audio interfaces + high speed internet connection

- **ASIO drivers**
- **Optimised software**



Public server (Europe)

Latency = 69ms

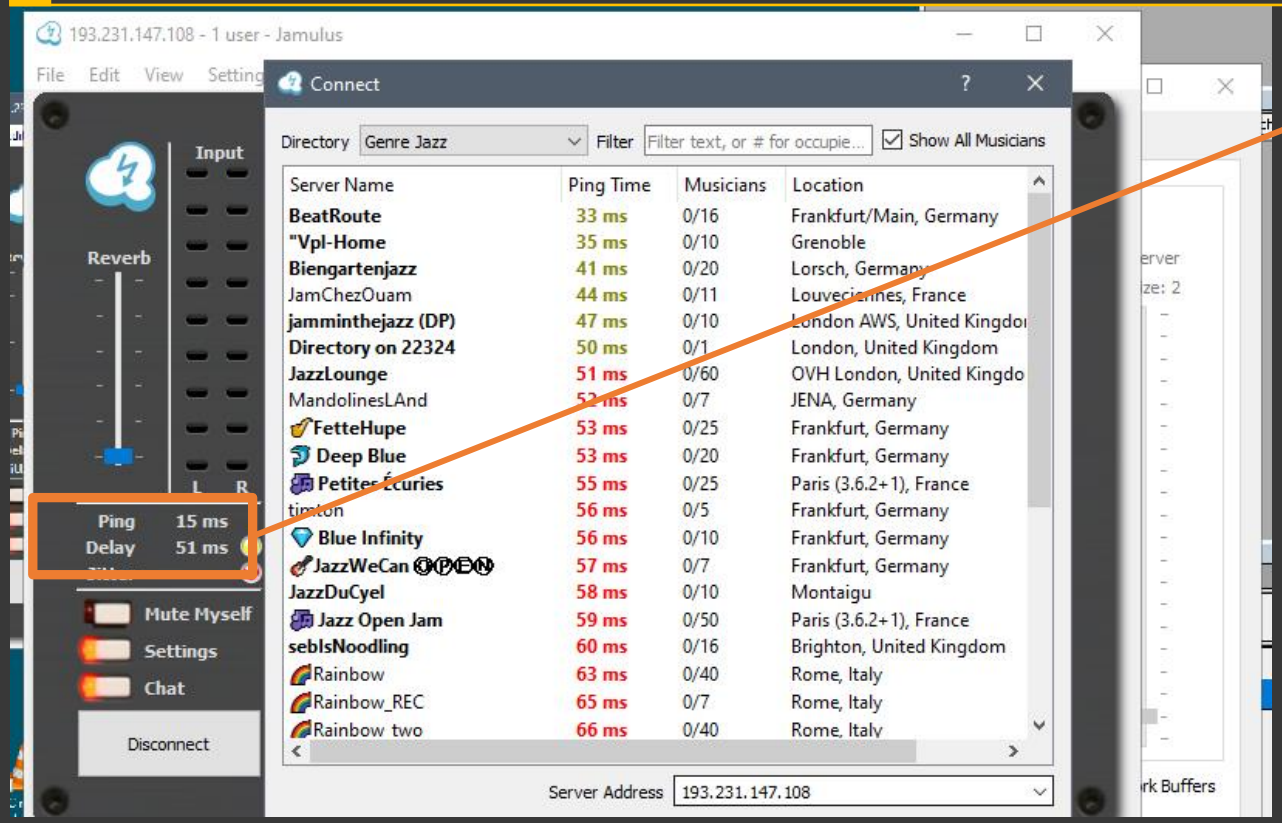
Developing of technical solutions for remote music education programs

Investigating the technical performance of dedicated software (JAMULUS) + professional external audio interfaces + high speed internet connection

Local private server

Developing of technical solutions for remote music education programs

Investigating the technical performance of dedicated software (JAMULUS) + professional external audio interfaces + high speed internet connection



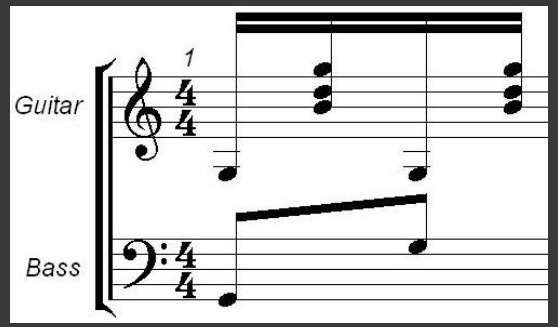
Local private server
Latency = 51ms

Guitar + bass

eights, medium tempo

Guitar + bass + piano

sixteenth, tempo 90-220 BPM



Developing of technical solutions for remote music education programs

Investigating the technical performance of dedicated software + professional external audio interfaces + **dedicated data connection**

Remote rehearsals and two-team synchronous remote concert

- **JAMULUS**
- **ASIO drivers**
- **Dedicated data connection - RADIOCOM** **National Society of Radio Communications**
- **Partnership with ”Tudor Jarda” Music High School - Bistrița**

Developing of technical solutions for remote music education programs

Investigating the technical performance of dedicated software + professional external audio interfaces + **dedicated data connection**

Remote rehearsals and two-team synchronous remote concert

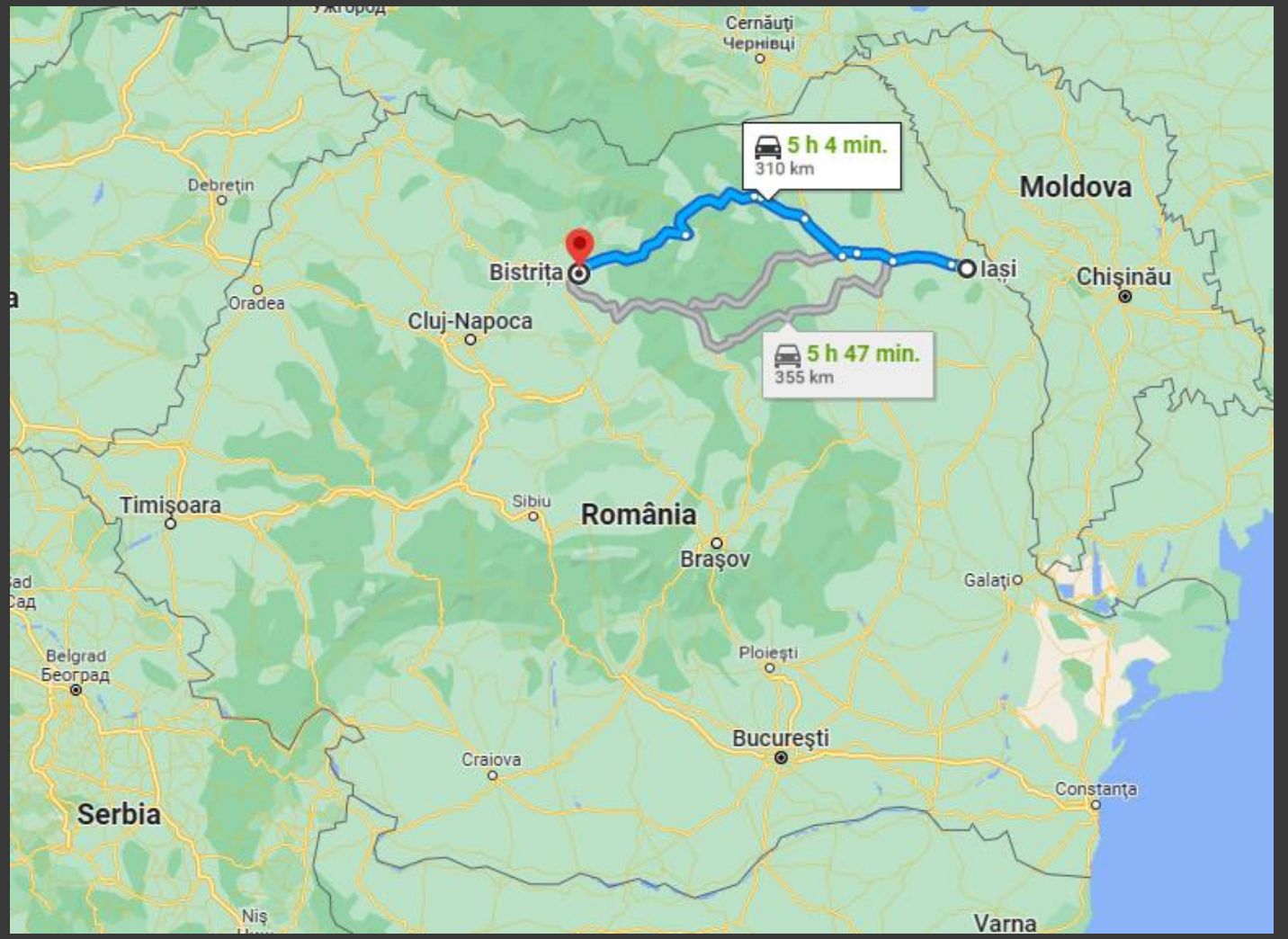
- **JAMULUS**
- **ASIO drivers**
- **Dedicated data connection - RADIOCOM** — **National Society of Radio Communications**

Latency of ~ 18 ms

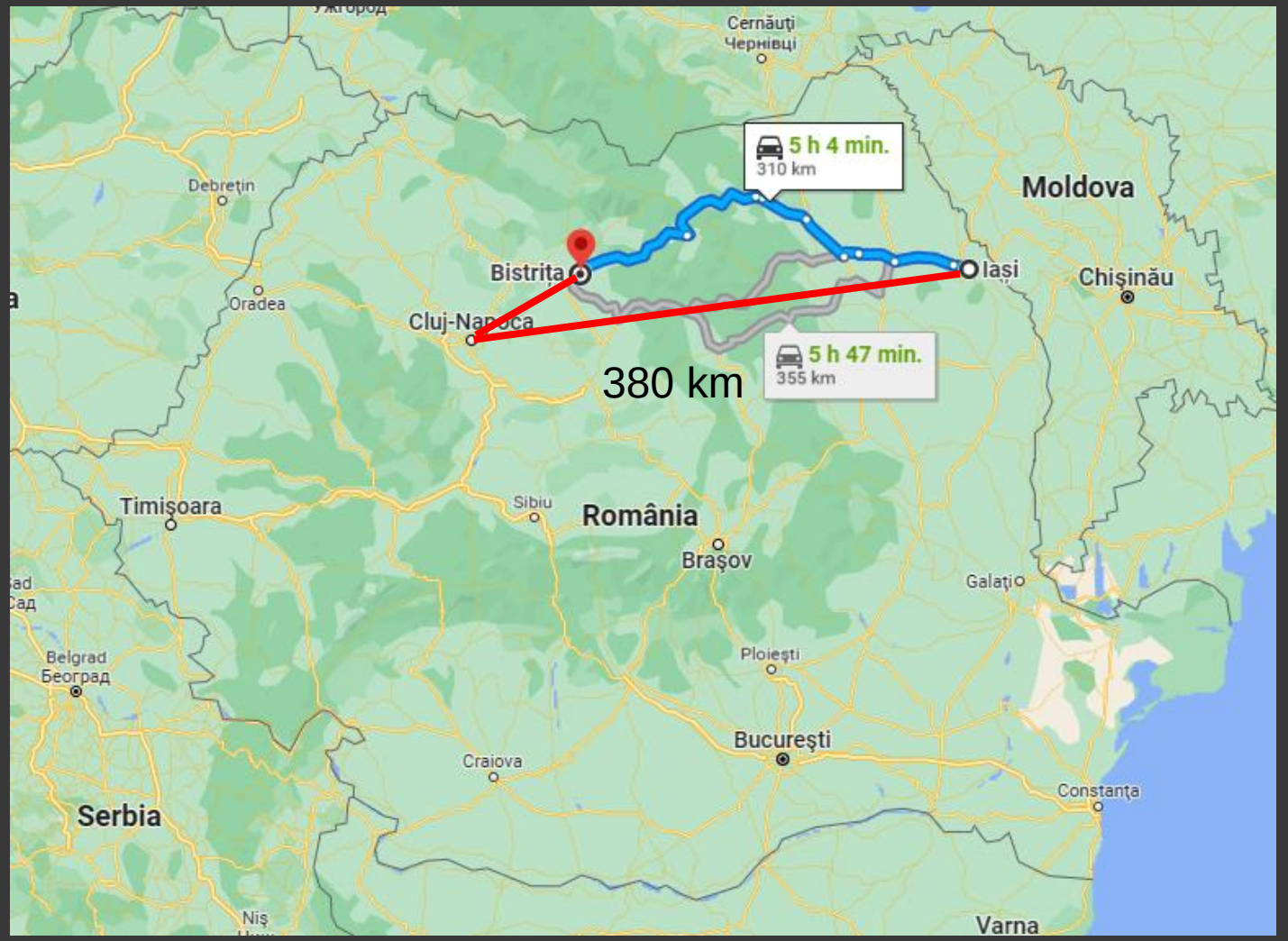
- **Partnership with ”Tudor Jarda” Music High School - Bistrița**

ICMA
Institutul de Cercetare Multidisciplinară în Artă

Developing of technical solutions for remote music education programs



Developing of technical solutions for remote music education programs



Developing of technical solutions for remote music education programs

Iași - National University of Arts

Bistrița - Music High School

Developing of technical solutions for remote music education programs

P. Hindemith
Sonata for flute and piano
flute + piano

Take Five
clarinet + guitar
guitar

Moanin'
flute + trombone
combo

Black Hole Sun
singer + bass
piano drumset

AEC - Pop & Jazz Platform 2023

Long distance live performing in ensembles - made possible

THANK YOU!

PhD. Habil. Associate professor **Dan Spînu**

”George Enescu” National University of Arts - Iași, ROMANIA