(Updated 144th September)

Current challenges list (complete by Friday 8th Sep):
Please can each PI provide 3-5 items after discussion with their team

Max:

Integration. We don't have all the three complete systems fully working and there are challenges in their stability. What is the best way forward to integrate the different components of the system into working prototypes and make them more stable? One issue is to make multiple developers be able to work in parallel at different versions of the system, but this has a cost in terms of documentation and accessibility. The other issue is to choosesys

Publications: We have recently produced numerous conference proceedings and impact activities, but not many papers yet. What is the best plan and publishing policy for the work we have done?

Usability: ARME is creating research-grade tools and we have not yet put enough attention to the user interface and practical aspects of the system. What is needed to transition from a research tool to a consumer product?

Alan:

Practical exposure. Currently there aren't enough work stations with the full system implemented and ready to use. How can we set up multiple (permanent) work stations (PC and laptops), perhaps in the VR lab, for us to try out new features and changes?

Timing model. Are there any more adjustments we'll need for the parameters, and for the user interface (e.g. estimated alpha/beta at the end of the trial) etc? Do we want to try implementing kalman filter/Bayesian before the first (audio system) evaluation study?

Sean:

Mark:

Bringing it all together: how to integrate the ghost notes with the model and plugin?

Testing: does the final model remain stable and accurate enough? How do we test this?

Onset variance results: is the accuracy of Antescofo good enough not to affect parameter estimation?

Maria:

Paradigm. Option 1: Participants (musicians) will tap in sync with either a virtual or human tapper and discriminate (2afc) between the two. Option 2: Participants will listen to (and discriminate) A and B tapping together, where B can be a virtual or real tapper and A is always a real person. With option 1 we assume that participants would always try to synchronise while minimising async var, so we may not be able to observe how real/virtual tappers behave with a very noisy partner; with option 2 we have the option to include conditions where synchronisation goes wrong. Which is better?

Lags. Evaluation of system lag time (includes Calculation time and OSC delays, midi sampling delay, time stretching etc.) and its impact on behaviour. Can we measure this objectively and subjectively? Especially between tapping to the system and to a real person.

Condition. How to best show that our system works – changing alpha and beta values? How can we use live alpha values? What about varying the tempo and/or musical dynamic?
Progress. First study planned for Oct-Dec 2023. We need an estimated timeline for when screen based, AR and VR will be ready. Note that the full system requires annotation and antescofo so system delay time will be different (e.g. antescofo ~150ms).

Susan (workshop 14th AM/PM, dinner, 15th AM/PM)
Sean (workshop and dinner on 14th)
Max
Mark 14/15 + Dinner
Genia (Workshop both days, and dinner on the 14th)
Busola (Workshop + dinner)
Will (Workshop both days + dinner)
Michael (Workshop 15th)
Diar (workshop 14th AM/PM, dinner, 15th AM/PM)
Hugo (workshop both days + dinner)
Abhishek (workshop 15)

Demos:
https://coda.io/d/_dYLMtuRrqSv/Demos_suFnT

Program (for distribution)

Location: Gisbert Kapp building, Training room 6 room N305

14th September - Thursday
- 10.45 arrival and coffee
  N=11 Max, Alan, Sean, Mark, Susan, Diar, Maciek, Genia, Will, Busola, Hugo

- 11.00 Internal announcements, ARME team organisation, timeline (Max)

- 11.15 Pitch to peers (10 mins elevator pitch for future grant ideas extending ARME)
  11.15 SLOT 1 Susan
  11.30 SLOT 2 Hugo
  12.00 SLOT 3 Max
  12.30 SLOT 4 Mark
  13:00 SLOT 5 Diar

- 13.30 Lunch
  N=13 Max, Alan, Sean, Mark, Susan, Diar, Maciek, Genia, Will, Busola, Hugo + Nori, Peter

- 14.00 Opening (Max)

- 14.30 Timing progress (Susan model parameters; Hugo kalman filter; Mark sliding window, padded bgls, ghost note)
- 15.10 Annotation progress (Maciek onset/beat detection algorithm)
- 15.30 System progress (Genia Busola Antescofo; Genia delay evaluation; Sean plug-in features)
- 16.00 coffee break
- 16.20 Movement progress (Diar, Will mocap)
- 16.40 XR progress (Diar visuals avatars from mocap; Will, Genia unity, segmentation)
- 17.00 Nori's talk <u>Ensemble synchronization in Malian drumming</u>
- 18.00 Round the table discussion
- 19.00 Team dinner (Edgbaston hotel)

  N = 13 Max, Alan, Sean, Mark, Susan, Diar, Maciek, Genia, Will, Busola, Hugo, Nori, Peter

<u>15th September - Friday</u>
N=17 Max, Alan, Mark, Susan, Diar, Maciek, Genia, Will, Busola, Hugo, Nori, Peter, Nick, Michael, Abhishek, Phil/Steve, Adrian

09.30 Progress overview (Max)
- 10.00 Day 1 summary; Current challenges - see list above (Susan)
- 10.45 coffee break
- 11.00 Current challenges cont. (small group discussion)
- 12.00 Peter's talk <u>The ADaptation & Anticipation Model of sensorimotor synchronization: Where's ADAM been; where's it going?</u>
- 13.00 Lunch break & demos in VR Lab (VR Lab N418, 4th floor Gisbert Kapp)

ARME DEMOS (List on the right here: https://coda.io/d/_dYLMtuRrqSv/VR-Lab-Demos-tracking-document_suFnT):

- 14.00 Break out group discussion
- 16.00 coffee break
- 16.30 Group discussion, evaluation study (Susan)
- 17.00 VR Lab inauguration and drinks reception (VR Lab N418, 4th floor Gisbert Kapp)

ARME+VR Lab DEMOS (List on the right here: https://coda.io/d/_dYLMtuRrqSv/VR-Lab-Demos-tracking-document_suFnT)