



getnext
the fan platform

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GetNextLive

In-concert multisource

WiFi video streaming services

SME continuous call – Stage 1

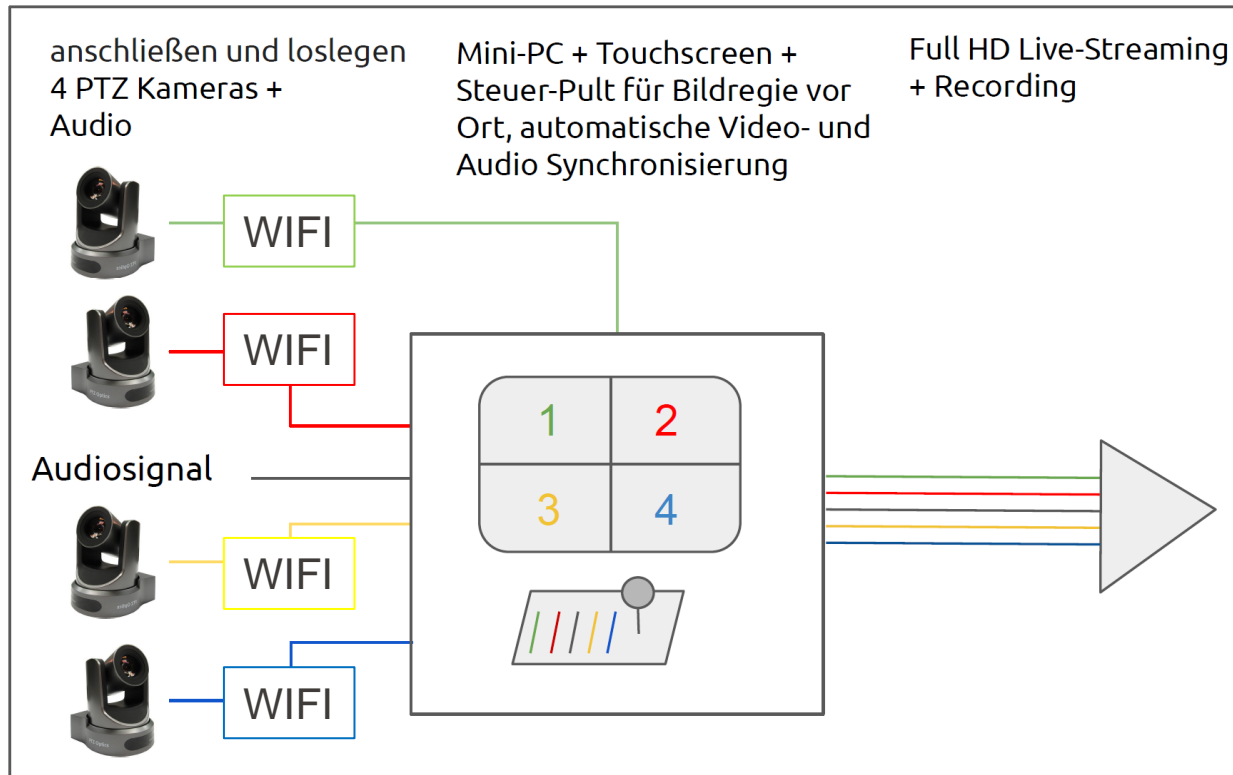
Online review

20.11.2020

Background and motivation



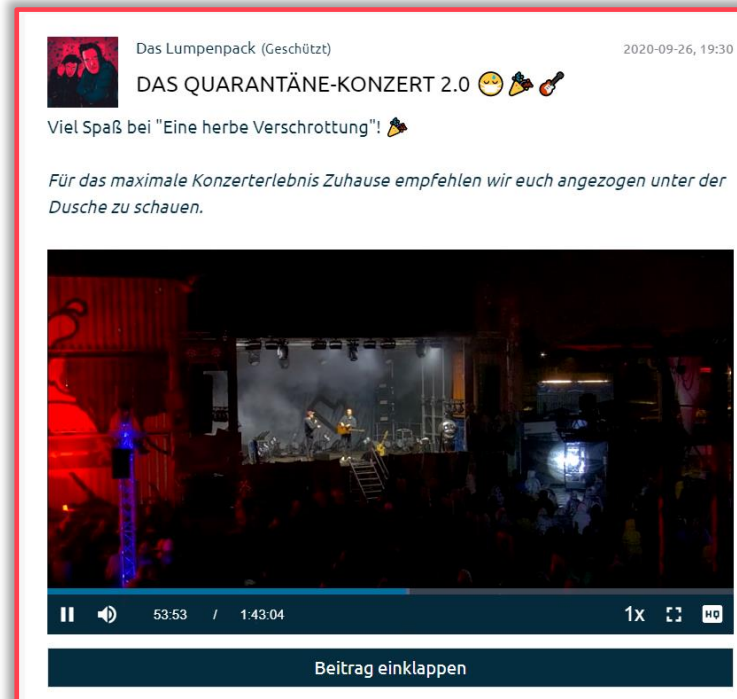
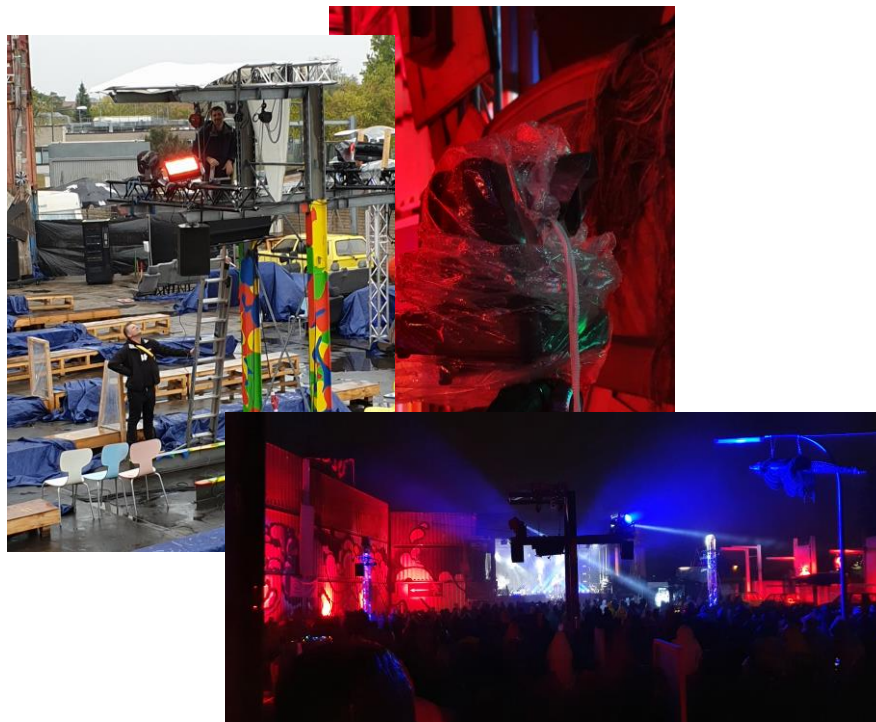
- The GetNextTo platform is a solution for artists wanting to be close with their fans.
- It allows artists to sell content to their fan-base.
- Without GetNextTo artists are facing the problem to distribute content on a high-quality level to their fans, without using data-collecting and ad-supported platforms
- The most attractive content is video and artists need additional services providing easy video content creation, especially from concerts.



Solution



SETUP & RESULT



Experiment description



CONCEPT AND OBJECTIVES

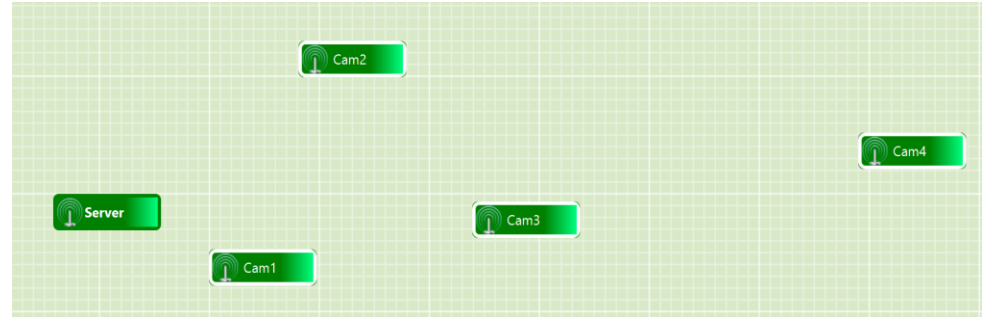
- Get to know the Fed4FIRE+ platform and design the experiment
- Focus on exploring the QoE differences when using IDR frames vs intra-refresh (planned for Stage 1)
- Create predefined profiles for video encoding based on QoS and QoE information (planned for Stage 2)

Experiment description



EXPERIMENT SET-UP

- w-iLab.t testbed
 - 5x Zotac nodes
 - 4 acting as cameras,
 - 1 as the receiving server
- The camera nodes have been placed in locations of the lab with various distances from the receiving server node, to introduce differences in the signal strength and potential more side-traffic disturbance. However, we were not able to study this aspect fully in Stage 1.
- The camera nodes were using our streaming software and have been transmitting pre-recorded clips of various qualities. The receiver node, recorded the video streams, with we then downloaded and evaluated offline using our QoE tool. For stage 2 we have planned to use a stronger machine in the test-bed, to install our QoE tool there and perform QoE measurement in real-time.



Project results



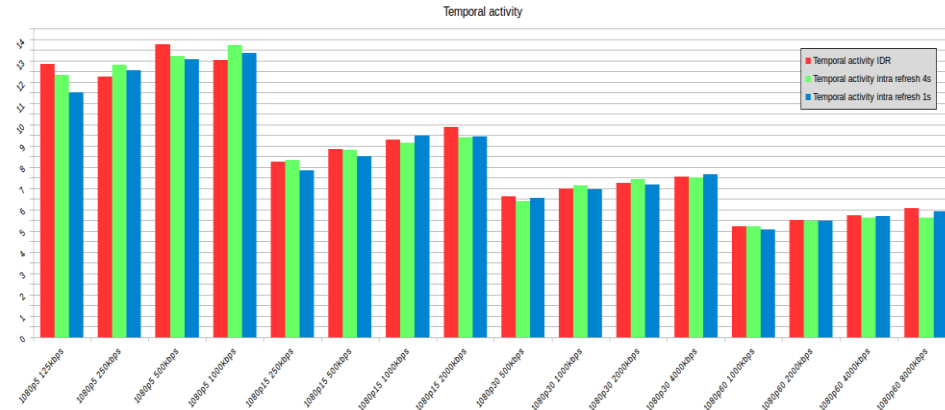
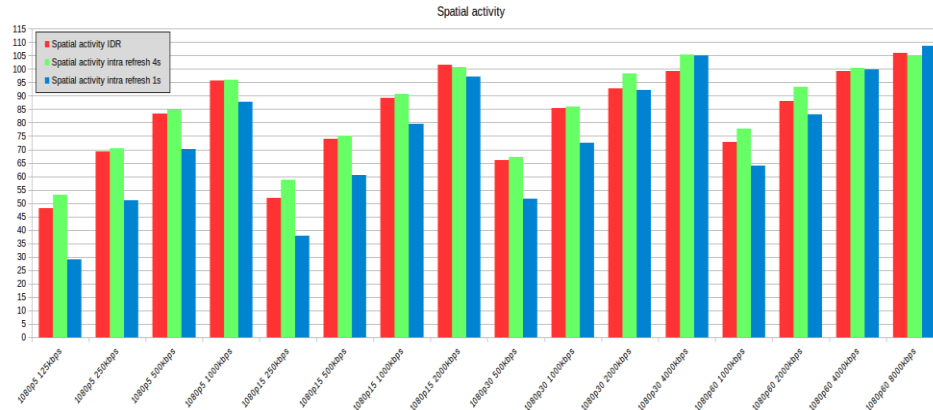
MEASUREMENTS (QUALITY OF EXPERIENCE)

- We have used the automatic QoE measurement tool available from AGH University <http://vq.kt.agh.edu.pl/>, that has been modified by our developers
- Measurements of the QoE has been done using a no reference software module. The module calculated values of some low level video metrics.
- Main metrics used
 - Spatial activity - This metric resembles the amount of spatial details in the image. Too strong compression would result in diminished value of this parameter.
 - Temporal activity - This metric corresponds with an amount of temporal activity in the video. The higher the values, the bigger the change from frame to frame.

Project results



MEASUREMENTS (QUALITY OF EXPERIENCE)



Spatial activity, side traffic present

Temporal activity, side traffic present

Project results



LESSONS LEARNED

- In the experiment there were 3 types of GOP compared. First of them was a classic GOP with IDR frames, allowing easy restarts of the stream at each IDR frame. This GOP configuration, when fit into a low-delay restricted-bandwidth channel, suffered distinct quality degradation on each instance of IDR, since such frames contained image with no previous context squeezed into a size similar to the size of other frames.
- Looking at the results, especially the overall QoE metric, in the measured scenario where no packet loss occurs, the classic IDR stream proved to be supreme to the intra refreshed stream with longer period, the difference however is not significant. The intra-refreshed GOP with short period on the other hand proved to be significantly worse, especially when allocated little bandwidth. This is not unexpected, since a proportionally large portion of the image is frequently refreshed without previous context, which must degrade quality. A theoretical gain when subject to frequent random packet loss was not able to be verified in practice.

Business impact



VALUE PERCEIVED

- In Stage 1 we have gained vast knowledge about the Fed4FIRE+ testing tools and the w-iLab.t testbed.
- We have designed our initial experiment and were able to conduct first test.
- Transmission using different techniques, IDR-Frames vs intra-refresh. We have also gained you ideas for further experimentation in Stage 2.
- This is a good return of investment reached with efforts below 2 PMs. Unfortunately, due to the COVID-19 situation, we are not able to continue our experimentation.

Business impact



WHY FED4FIRE+?

- The federated test-beds have made it possible to choose a test-bed that fits our needs and the set of tools allowed to quickly plan and execute the initial experiment
- The available funding allowed us to pay for the additional development work, that had to be conducted

Feedback



USED RESOURCES AND TOOLS

- w-iLab.t testbed
 - 5 Zotec nodes – the reservation was easy, after solving some problems with certificates. It was allowed us to run experiments when we wanted to.
 - jFed – is a good tools and allows for easy reuse of a designed experiment.

Feedback



ADDED VALUE OF FED4FIRE+

- We got good support from the technical teams and also the administrative part was very light.
- The process of starting the extermination was straightforward, but we had to get the certificates first, learn jFed and how to reserve resources. This took some time.
- In our opinion the federated test-bed gives great experimentation possibilities, especially for big and complicated networking projects.
- We have used only a fragment of the large possibilities available in Fed4FIRE+, but we think, that also allowing such small-scale experiments, bring large benefits to SMEs like ours.



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THANK YOU VERY MUCH

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