

Evaluation with Stakeholders

Project Sonic Onyx

Interviews

Conducted by
Salah Uddin Ahmed

Index

A.Interviewing the Sponsor.....	2
B.Interviewing the Artist.....	4
C.Interviewing the Developers.....	10

[yet to do - Interviewing the pupils and the teachers of the school]

A. Interviewing the Sponsor

(The interview was taken at the office premises of the interviewee in Trondheim Municipality office)

Trondheim Municipality

Name of the Person: Ulrika Johansen

SONIC ONYX

1. What was your intention behind the Sonic Onyx as an interactive art work? Or, why you focused on Interactive art installation?

It was not specifically intended to be interactive. It was only decided to be technology based. Midgaard Media Lab proposed to be interactive.

2. Why did you choose the school premises? (not any other place or institutes)

Berit Asknes chose the school premises. Trondheim Municipality did not make the choice.

3. What was your expectation from this kind of technical art work in the premises of a school?

Not Appropriate for Municipality as they did not choose the premises.(NA)

4. Who you thought will be the users/visitors of the art work and what message you wanted to reach to them?

Not Appropriate for Municipality

FUTURE OF SONIC ONYX

5. What is your future plan with Sonic Onyx? Do you want to upgrade/ extend this artwork in future or you want to leave it like this?

The two main users are the future of the artwork. Students at the school, they are part of the development, and second is professional artists.

6. How do you evaluate the Sonic Onyx? Are you satisfied with the final work?

I am satisfied. I like the interactive part of the artwork.

7. What do you think could be added as a feature?

NA

8. Mention some positive points of the artwork? Is there any negative side of it? If yes, what are they?

NA

ATTITUDE TOWARDS TECHNOLOGY DEPENDENT ART

9. What are your experiences with installing these kinds of artworks? How many projects of these kinds you (Kommune) have sponsored?

Municipality has some experiences of technology based artworks. They know the fact that technology based artworks require more resources.

10. How do you see the difference between traditional artwork and interactive, technology dependent artwork? How is your strategic support towards both of them?

If we have an art, a technology based art, then we should have fund for maintenance as well.

11. Do you want focus more on technology dependent art or traditional art?

The focus on technology based artwork is positive. Usually in art projects it happens like this- artists propose an art project and the municipality evaluates the proposal. So technology dependent or traditional depends on the artist and the proposal.

12. What do you think about using technology in artworks, or technology dependent artworks?

Not asked, found Not Applicable

13. As a sponsor how do you support these or how do you prioritize evaluate them?

Not asked, found Not Applicable

14. Do you want more technology dependent art works in your municipality?

Not asked, found Not Applicable

MAINTENANCE

15. What is your plan about the maintenance and upgrading of the artwork?

Right now, the municipality has lack of funds. So at the moment, they do not have a big plan. But they will welcome maintenance and upgrading proposal which fits in their budget. The proposal has to be for the moment only about the basic maintenance and upgrading.

16. What is your future plan regarding these kind of art projects?

Usually in art projects it happens like this- artists propose an art project and the municipality evaluates the proposal. If there is enough funds and the proposal is accepted then they sponsor the artwork. We hope in future when the economic crisis is over; Trondheim municipality will sponsor more artworks.

BUDGET

17. How expensive do you think technology dependent artworks are? Compare to the traditional art.

I can say that they are more expensive. But it depends from artwork to artwork. Sometimes even a traditional artwork can be very expensive. The significant difference in these two is that technology dependent artworks need frequent maintenance compare to the traditional artworks.

18. Do you think it is possible to support these kinds of art when the Kommune has limited budget?

It is a bit hard to support when we are short in funds. Right now, the municipality is going under economic crisis. The interest rate has increased almost doubled and Municipality has other priorities too. So we have a tradeoff.

19. Would you like projects developed by students in future in order to decrease the expenses.

It was the artist's responsibility to make the project success. So, Samir was responsible for whether the student collaboration fails or succeeds. Municipality has no preferences about the involving students.

20. How much you expect to spend for maintenance and upgrading of art projects monthly/ yearly?

Municipality has allotted 1.5% of its budget for art purposes. From 2003 up to 2008 the municipality has funded near about 90 pieces of artworks. This includes all kinds of pieces -small, medium or large artworks. So the Municipality actually has significant amount of budget to spend for artworks. Right now the economic condition of Municipality is not so well, but when it will be better we hope to support more.

**

B. Interviewing the Artist

(The interview of the artist was taken by email and later on by phone)

ARTIST'S BACKGROUND EXPERIENCE AND SKILLS

- 1. What is your previous experience as an artist? (Describe the types of work, like composition of music, painting, and installations. If possible include the number of works and/or period worked on them)**

After I accomplished my art study in France in 1986. I realised several art projects. I can't give you an exhaustive list about all the art works I have done earlier. But I can try to schematically describe some few selected works. I use to work on series, installations, video, sound, photography and other media and techniques.

1986. The Martyr Fontaine, sound installation. For this work I used several transducers to move a red liquid on the top a 16 m2 spiral form and to create sounds.

1988. The Shismatics, We are so titanical, Sound objects and installation, in collaboration with a Netherlands based experimental Rock group.

1994 - 97. Lux series, Lights and interactive sound installations and objects.

1997- The Sounding Steel Forest, interactive sound installation.

1998- In between, video and sound installation.

1999 - 2004 productions of several videos and sound compositions

2004 Name Names, interactive sound installation

2005 – 2007 videos, photos, objects and sound installations

2007 Sonic Onyx, interactive light and sound space.

- 2. What is your previous experience with working with students?**

I have about 15 years experience in visual art teaching.

- 3. What is your experience with software in relation to artwork or software in general? (list what software you have been using in the past artworks)**

My use of software for art purpose can be divided in 6 categories.

Here are the main fields and software applications:

1) Photography:

Phase One, Photoshop CS,

2) Graphic art and animation: Macromedia Studio, Director, Flash, Illustrator, Indesign

3) Video production and postproductions: Final Cut Pro HD, Quick Time pro and postproduction software, Cinema tools, DVD studio pro, Peack DV Pro,

4) Sound compositions and installations: Max Msp, Jitter, Cubase SX, Protools,

Sampler Kompakt from Native instruments,

Bias Peack SoundSoap pro.

5) 3D software for modelling and design: FormZ, render zone.

6) Internet based art works: Linux redhat,

Plesk server administration, software packages for web hosting, Apache,
MySQL, Cron, ...

4. Have you been using OSS (open source software) in the past? If Yes, then for what purposes and for what reasons you chose open source?

Yes, I have been using OSS since 2002, since I started working with a social and political related art project named art19. Art19 main purpose is to promote freedom of speech and expression in general and particularly freedom of art practice and communication. I choose Open Source software for this project because of the idée of free circulation and exchanges connected to it. Because it is cheap and when it comes to the Internet there are many very good applications and solutions. The idée of protecting creativity by free exchange make sense with the idée of freedom of speech and expression. Art19 is also a project dedicated to artist from North Africa or originated from the Maghreb region, which brings us to the problem of access to technology for emerging countries.

With this last experience, the Sonic Onyx project, which is mainly based on OSS I start to think of all the possibilities this can open up different electronic art practices.

5. What is your experience with computer hardware, computer hardware or electrical, for example sound cards, cables, speakers and others related to installations?

Before I started my art education I was following another education as electrical engineer for about 3 years. I also have experience from working professionally in this field. That means that I have some basic knowledge in electrical to understand and manage different types of electrical and hardware related issues. I have also knowledge in acoustics and electro acoustics

SONIC ONYX PROJECT

6. How was the project initiated? (whose idea was the creation of the sculpture, what was the initial plan and how it changed into the current project)

The art project sonic onyx is commissioned by the city of Trondheim and chosen by a Jury panel. The idea behind the project is mine.

The most important changes are related to the sound part of the project. This is connected to the context and some insecurity related to the collaboration with an unknowing second part. The project has evolved and changed with the process. I wanted to create an architectonic space where pupils can interact with each other, play and experiment with sounds. I wanted to create a place for communication and free speech where pupils can send messages to each other or express opinions or ideas. But I became quickly aware about the potential of victimization such idea imply, especially in a secondary school. Then I started to think in other directions. How to make sound art by censoring user contributions? It becomes a kind of creative censorship inspired by surrealist method

For the technical part there was also some changes. Schematically my plan was to create an interactive 3D sound installations where user can interact with the sculpture by sending different files, text, images, sounds, videos to the sculpture and get back different sound compositions from a 3D sound system. To create this interaction I had two different options in mind using the Internet or mobile phone technology or both.

When I met the student and the resource group I felt that I could expand the capabilities of the interaction by letting user play directly with the sculpture sound software through the keyboards of their mobile phones. But this possibility was later postponed because we hadn't enough time.

7. Who are the sponsors/commissioners? How is the budget decided?

The city of Trondheim is the commissioner. The artist works out the budget.

8. How much the project cost (what are the limitations)? What outcomes should be reported to them (sponsor)?

Sonic Onyx will cost about 900 000 kroner.

The limitation was 800 000 kroner. The outcome is the artwork. There is no report obligation connected to the project.

9. Why have you chosen students to develop the software part, or who & why have chosen students?

When I first started to work with the sound part of the project I was planning to produce most part of the system by my self. But when the representative of the city of Trondheim suggested collaboration with NTNU I became very interested and opened up for more experimentation and participation. The first person from NTNU I was introduced to was Jarmo Roksö from Midgar media Lab. Jarmo

Roksö became within a relatively short time a door opener and a valuable support throughout the whole project. It was Jarmo who proposed the students from HIST.

10. How was the contact with the students made? Is there any agreement? How was the agreement made?

Jarmo introduced me to the group of students from HIST, Sør- Trøndelag University College, Department for Electro and Computer Technique.

There was no written agreement but we had an introduction meeting where we defined the task and expectations and our respective roles.

11. What interaction would you like the sculpture to offer (how it will be used)?

When it is not in use I would like sonic onyx (the sculpture) to play contemporary art music and sound compositions.

When it is interactively in use I want the users to play with text and relate it to sound, with images, photos to sounds and sounds to sounds. I want them to play and discover different ways of relating sound to other media and vice versa.

12. What impression/influence on the audience you expect/want the installation to have?

I want it to have a positive impression on the audience. I want it to be perceived not as a sculpture but as an architectonic space or something in between. I want it to become a kind of playground, a space where pupils can play with sounds. I want it to become a strong and active visual marker. I want to expand the definition of public art by becoming some thing not only to look at, but some thing you can enter in an interact with. I want it to contribute in increasing the visual quality of the environment also by being some thing that introduces other deeper associations.

13. Please describe your requirements considering, the sculpture design, i.e. what the sculptor should have as functionalities, or properties (hints: describe things like “It has to be big enough for the pupils to enter in it”/

Sonic Onyx must be large and big enough to be perceived as a space and not as an object. The users can choose to enter the space and maybe interact with its system or stay out and just look at it. The globe on the top where the Led light system is placed will be illuminated. The light will change in colour and intensity with the ambient temperature variations. The sound should not become a source of pollution and should not disturb the neighbours. The sound must be shutdown in

the night times. It should be equipped with a user guide to inform the users about its interactive capabilities.

14. Requirements considering the software part (hints: might include requirements like: fast , flexible to changes, well documented with user manuals, extensible, etc.)

The software must be fast, stable and flexible to changes and possible to upgrades. It should be well documented with user manuals and user guides about how to maintain the system, to update it and how to troubleshoot it.

COLLABORATION IN THE PROJECT

15. What qualities were you expecting that the developers (students) should have?

I expect them to have good knowledge on programming and electronics. To be flexible and curious about art if not interested. To be playful and not afraid to try some thing which seems not so very “useful”.

16. What you feel are the major issues and factors of such interdisciplinary projects, issues related to communication, collaboration and understanding each other?

Interdisciplinary is a very important and interesting issue in media art because it implicates communication and collaboration with other peoples and other disciplines. Interdisciplinarity is per definition a relational issue it permits to develop, not only project but also ideas, networks. It opens for genuine understanding and if successful for real collaborative relations.

17. What areas or when you expect help/ ideas/suggestions from developers or computer experts?

Actually I expected more a kind of collaboration than help. I wanted to have and open exchange where ideas can emerge and develop. I expected a good expertise in software developing but also and open minded partner who can give you feedback.

18. How would you describe the communication with the developers in this project? Is it going well? Or lacking in some cases? Is there any suggestion or comments from your point about improving it in future?

The communication with the student was good. I communicated quite well with one of them by e-mail and phone. We also had fixed periodic meeting with the whole group included tutor and resource persons in order to present the work in progress. This function quite well, but I think it will also efficient for this kind of

project to have a list over relevant actors in this area and to invite them to the start up meeting.

19. Comments: - Some good points or bad points about the project. Or any other that you want to tell.

The positive point is that I consider the project to be a success. There where a lot of positive energies and positive results. The negative points are to many gaps between different phases of the process, between expectations and response, between school works and professional responsibilities and so on.

This kind of project puts allot of extra work and responsibility on the shoulders of the artist. You have to know what you are dealing with. Because for the students when the school report is delivered every thing is finished. But for the artist maybe is there when the difficulties starts. One thing I consider as very important with this kind of project is to realise comprehensive tests before delivering it to the artist. This point was neglected and when we finally tested the system we found some serious issue that still are unsolved. In order for artists with no especial knowledge in software or electronics to produce media projects there must be more commitments from the developers side. Maybe they have to act not only as students, but also more as professional. But maybe this is too much to ask for.

20. Some comments about the questionnaire, (is it easy, hard to understand, not very relevant or OK)

It is quite hard to answer some of the questions because they are to open and induce many possibilities.

**

C. Interviewing the Developers

(the interviews of the developers were taken over phone)

Name of Developer: Einer Thorsrud

COLLABORATION

1. *How many of the students knew each other before? For how long they have known each other?*

4 of the 5 knew each other before. We knew each other for more or less 3 years. But we did not have experience of working together as a group like this. We had

worked together on some courses at the university, but they were small group working tasks compare to this project.

2. *How was the collaboration among the developers? (developers with other developers)*

The collaboration was good. This was also benefited from the fact of knowing each other before and working together in school.

3. *How was the collaboration between artist and the developer? (how do you grade it on a scale of 1 to 10)*

It was quite good. Rather than grading, I would say it was very good. However I felt that the artist was more ambitious at times.

4. *Write three positive and negative things about the collaboration.*

Positive

Everybody was very open and friendly

Negative

No strictly defined requirements,

Artist often didn't know what he wanted.

Artist was too ambitious

5. *What could have been done to make the collaboration even better?*

I would like to have strictly (pre)defined tasks, I mean requirements

6. *What did you expect from the artist in the collaboration? And what did you actually get from him?*

I would expect that the artist have defined set of requirements.

SOFTWARE DEVELOPMENT METHODOLOGIES

7. *What do you know about software development methodologies? What method you think you have applied in the project?*

There was no previous knowledge on software methodologies at all. What I can say about our methodology is that we tried to make the application as quick as possible.

8. *How much was your influence / contribution in the artistic part of the project? Explain shortly.*

We had some influence but I think that was not so much.

9. *How much was artists contribution/ influence on the technical part of the project?*

The artist contributed in the technical part by helping us in choosing technologies. He gave us feedback on what is good and what is bad or what is suitable for the project. He also suggested some optional tools to check and try.

10. According to you what are the factors that affects the failure and success of a project like this? Name some factors, think about factors related to artist, related to developers, related to project duration etc.

Positive

Developers' experience

Good cooperation

Know beforehand what we are going to do

Negative

Frustration related to what to do

Communication with artist

11. If chances were given, would you like to evaluate the artistic value of the project?

NO

12. If you were given the same project again, what you would have done differently?

Better Planning

MAINTENANCE AND UPGRADING

13. What do you think about the handover of the project to the artist? Was it too short? Too brief? Was the artist capable of capturing everything he needs to run the application?

It was short in a way, but our project finished before the artwork was scheduled for implementation and deployment at the school.

14. What is your opinion about the back up of the system? How urgent it is? How difficult /easy /simple it is?

We did not make a back of the system. Actually we did not have enough time to make a back up. But I think the back would be simple as the application is a small one.

15. What is your opinion about the maintenance of the system? Which one is the most critical part of maintenance according to your opinion?

I think once the system is made to run, the maintenance of the system includes handling of music files, uploading the music files and storing them on the server etc.

16. What have you learn from the project? Both from academic viewpoint and

professional project level viewpoint.

Not so much from the academic viewpoint.

From professional viewpoint, we learnt project work process, and management of large project etc.

17. What did you expect from the project in terms of learning? That is what did you expect to learn from the project before you started the project?

I thought that we would learn some knowledge about audio part of the project such as signal processing, and audio programming with MAX or Pure data. We expected that we would have more time to focus on the main problem, not on defining the problem. We did not expect the project would be so loosely defined.

18. At the end of the project, how do you see it, have you learned all that you had expected? Did you learn something extra that you have not expected before? Or is there any lagging between your expectation and the actual learning?

We learned python programming and PureData. Actually most of the things that we have learned were unexpectedly.

19. What kind of knowledge and resources are required for future maintenance and upgrading of the project?

Processing part - knowledge on how the system works, python language and basic programming skills.

SPECIALITY OF ART PROJECT

You had been assigned an art project for your bachelors project. Compare how ART project is different from more traditional bachelors project such as a online shopping site, a database project, or a game project. The following two questions are specific to art projects.

20. Is it very common to have art projects or other sort of multidisciplinary project in your class? Institute?

No, it is not very common.

21. What positive things will you say specific to an art project as a bachelor's project?

The possibility to take part in the discussion, how the system will work was very interesting.

22. What negative things will you say specific to an art project as a bachelor's project?

The negative things are that, the project is not clearly defined which leads to frustrating situations.

23. *What was the most difficult part in the project?*

I think the most difficult part was the fact that requirements were not clearly defined.

24. *Do you take pride in the art work? Or do you think it is only for the artist himself.*

I like the end product as it is a fun. But I don't think that I take so much pride in it. It is more for the artist who designed it.

25. *Do you expect more acknowledgments for your work? Or do you think it was enough?*

No, I do not expect any more acknowledgements. I think it was OK.

26. *How much related do you think is the experience from this project for your future career?*

I think to learn about the work process was a good experience.

**

Name of Developer: Even M. Grytå

COLLABORATION

2. *How many of the students knew each other before? For how long they have known each other?*

4 of the 5 knew each other before. We knew each other for more or less 3 years. But we did not have experience of working together as a group like this. We had worked together on some courses at the university, but they were small group works compare to this project.

3. *How was the collaboration among the developers? (developers with other developers)*

The collaboration was quite good.

4. *How was the collaboration between artist and the developer? (how do you grade it on a scale of 1 to 10)*

It was OK, but could have been clearer.

5. *Write three positive and negative things about the collaboration.*

Positive-

Interesting, not an usual project to do.

Challenging

Negative

Not so clear requirements,

I wished to have more specific tasks from the beginning.

Artist was too ambitious

6. *What could have been done to make the collaboration even better?*

Artist could say more specifically what he wants.

More technical skills, because as BSc students we did not have enough technical skills.

7. *What did you expect from the artist in the collaboration? And what did you actually get from him?*

I did not expect that much at the beginning, only thing I knew that it was going to be somewhat different from a company project. Artist is a different character from other clients of a software project.

SOFTWARE DEVELOPMENT METHODOLOGIES

8. *What do you know about software development methodologies? What method you think you have applied in the project?*

No experience, I had only one course in programming in C. No knowledge about methodologies.

9. *How much was your influence / contribution in the artistic part of the project? Explain shortly.*

We had quite a bit of influence, for example in the output part.

10. *How much was artists contribution/ influence on the technical part of the project?*

The artist has some influence in the technical in the same way they had in the artistic part of the project.

11. *According to you what are the factors that affects the failure and success of a project like this? Name some factors, think about factors related to artist, related to developers, related to project duration etc.*

Positive

Get contact with people who are doing similar projects or are experts in this area.

Equipment and learning new tools can take some time.

Negative

Artist doesn't know what he wants

Short duration of project

12. *If chances were given, would you like to evaluate the artistic value of the project?*

I think I can't do as I do not have the knowledge to do it.

13. *If you were given the same project again, what you would have done differently?*

I would start programming from very beginning. In our project the creativity part took a long time.

MAINTENANCE AND UPGRADING

14. *What do you think about the handover of the project to the artist? Was it too short? Too brief? Was the artist capable of capturing everything he needs to run the application?*

It was a bit short, but I think the artist managed to capture everything.

15. *What is your opinion about the back up of the system? How urgent it is? How difficult /easy /simple it is?*

I think the back up of the system will be quite simple.

16. *What is your opinion about the maintenance of the system? Which one is the most critical part of maintenance according to your opinion?*

To me the most critical part is the sound system.

17. *What have you learn from the project? Both from academic viewpoint and professional project level viewpoint.*

We learnt

How to work with artist

Project development

Process

How to do programming for a project

18. *What did you expect from the project in terms of learning? That is what did you expect to learn from the project before you started the project?*

I did have so much expectation except that

We would learn something about signal processing and audio technology. I also expected Matlab.

We learned about development process and programming in PD which we did not expect before.

19. *At the end of the project, how do you see it, have you learned all that you had expected? Did you learn something extra that you have not expected before? Or*

is there any lagging between your expectation and the actual learning?

We learned python programming and PureData.

20. *What kind of knowledge and resources are required for future maintenance and upgrading of the project?*

Python language and basic programming skills.

SPECIALITY OF ART PROJECT

You had been assigned an art project for your bachelors project. Compare how ART project is different from more traditional bachelor's project such as a online shopping site, a database project, or a game project. The following two questions are specific to art projects.

21. *Is it very common to have art projects or other sort of multidisciplinary project in your class? Institute?*

No, it is not very common.

22. *What positive things will you say specific to an art project as a bachelors project?*

It is very interesting to work with artists, different from usual clients.

23. *What negative things will you say specific to an art project as a bachelors project?*

The negative things are that, the project is not clearly defined.

24. *What was the most difficult part in the project?*

Real time audio processing was difficult.

25. *Do you take pride in the art work? Or do you think it is only for the artist himself.*

Yes I am proud if the artwork. I have visited the location many times after the installation.

26. *Do you expect more acknowledgments for your work? Or do you think it was enough?*

I think we had enough acknowledgements.

27. *How much related do you think is the experience from this project for your future career?*

I think it was a good experience to learn -

- How to work in a project
- How to deal with other people for example artists

**

Name of the Developer: Thomas Ausphaug

COLLABORATION

1. *How many of the students knew each other before? For how long they have known each other?*
4 of the 5 knew each other before. We knew each other for more or less 3 years. But we did not have experience of working together as a group like this. We had worked together on some courses at the university, but they were small group works compare to this project.
2. *How was the collaboration among the developers? (developers with other developers)*
The collaboration was good.
3. *How was the collaboration between artist and the developer? (how do you grade it on a scale of 1 to 10)*
It was good too.
4. *Write three positive and negative things about the collaboration.*
Positive
 Interesting to work with artist, not an usual project to do.
Negative
 New specifications
 Changing minds
5. *What could have been done to make the collaboration even better?*
No changing of minds/specifications could make it better.
6. *What did you expect from the artist in the collaboration? And what did you actually get from him?*
I knew that artist have a special way of working. So I was not very surprised or was not negative at all with the actions of the artist.

SOFTWARE DEVELOPMENT METHODOLOGIES

7. *What do you know about software development methodologies? What method you*

think you have applied in the project?

No experience of methodologies.

8. *How much was your influence / contribution in the artistic part of the project? Explain shortly.*

We had quite a lot of influence; we were allowed to take part in the creative part of the project.

9. *How much was artists contribution/ influence on the technical part of the project?*

The artist has some influence in the technical part , he helped us with ideas of using tools.

10. *According to you what are the factors that affects the failure and success of a project like this? Name some factors, think about factors related to artist, related to developers, related to project duration etc.*

Time limit

Collaboration and communication

What the artist wants, he should also know the limits

11. *If chances were given, would you like to evaluate the artistic value of the project?*

No, I think I can't do.

12. *If you were given the same project again, what you would have done differently?*

I would like to have all parties agree on the final product earlier.

MAINTENANCE AND UPGRADING

13. *What do you think about the handover of the project to the artist? Was it too short? Too brief? Was the artist capable of capturing everything he needs to run the application?*

It was done too fast, it should have been done more detailed.

14. *What is your opinion about the back up of the system? How urgent it is? How difficult /easy /simple it is?*

I think the back up is very important. We could not do it due to lack of time.

15. *What is your opinion about the maintenance of the system? Which one is the most critical part of maintenance according to your opinion?*

To me the most critical part is the Server and the software.

16. *What have you learn from the project? Both from academic viewpoint and professional project level viewpoint.*

We learnt

- A lot about programming.
- Working in a team.

17. *What did you expect from the project in terms of learning? That is what did you expect to learn from the project before you started the project?*

I did not have any special expectation

18. *At the end of the project, how do you see it, have you learned all that you had expected? Did you learn something extra that you have not expected before? Or is there any lagging between your expectation and the actual learning?*

We learned sound processing

19. *What kind of knowledge and resources are required for future maintenance and upgrading of the project?*

Python and PD programming skills.

SPECIALITY OF ART PROJECT

You had been assigned an art project for your bachelors project. Compare how ART project is different from more traditional bachelor's project such as a online shopping site, a database project, or a game project. The following two questions are specific to art projects.

20. *Is it very common to have art projects or other sort of multidisciplinary project in your class? Institute?*

No, it is not very common.

21. *What positive things will you say specific to an art project as a bachelor's project?*

It is very interesting and it has positive sides, we can see things from different angles not just from the technical angle.

22. *What negative things will you say specific to an art project as a bachelor's project?*

I don't see any negative things.

23. *What was the most difficult part in the project?*

The most difficult part was to define which kind of hardware and software we are going to use.

24. *Do you take pride in the art work? Or do you think it is only for the artist himself.*

Yes I am proud of the artwork.

25. *Do you expect more acknowledgments for your work? Or do you think it was enough?*

I think we don't need that much credit

26. *How much related do you think is the experience from this project for your future career?*

I think it was a positive experience that we learnt something different.

But for my future job it might not be very helpful, it was a special project.