

ArTe Open Source Software Tools for creativity

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Norwegian University of Science and Technology

- NTNU
- 4200 staff members
- budget 4.2 bNOK
- 20,000 students
- Trondheim 140.000 persons



Vision

- The vision of ArTe is disseminating IT issues to teen-agers, their teachers, and decision makers in the society, with focus on creativity, cooperation, and openness of processes and content. ArTe makes IT visible by help of art.





How

ArTe encourages people to work in meaningful cooperative projects with the goal of producing novel forms of new media art. The ArTe project is focused on the relationships between new media art and openness, organized around three topics: the relation between the author and the audience, the media of the artwork, and the tools used to realize the artwork.

This presentation

This presentation will focus on open source tools evaluated according to the ArTe goals, with emphasis on Arduino, Scratch, and processing.

URL: <http://www.artentnu.com>

Testing the audience

- dissemination - research
- new media art - OSS



artentnu.com

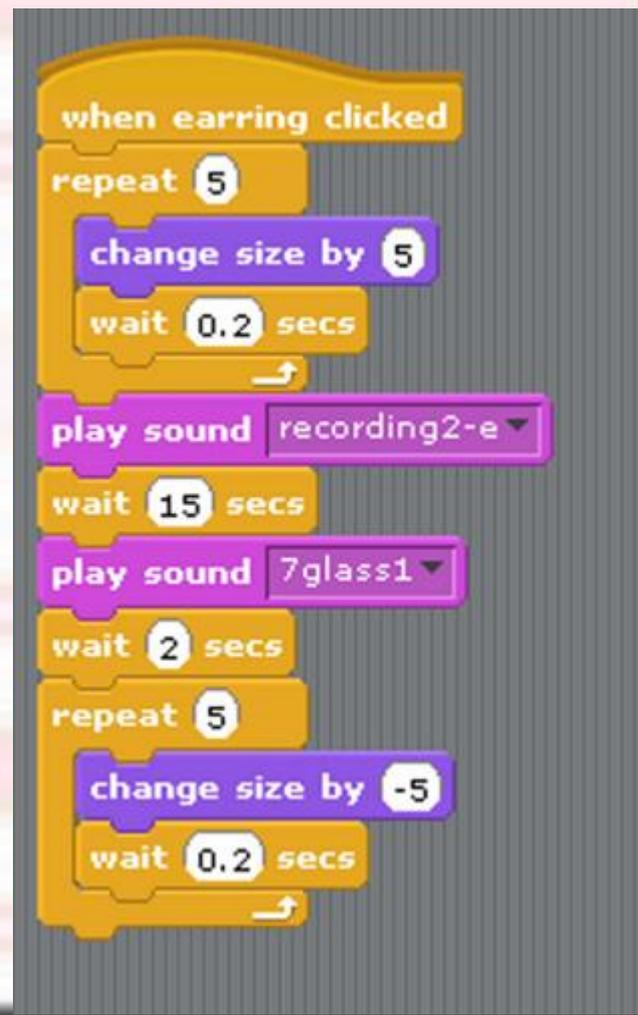
Norwegian Research Council – PROREAL 2009-2010

- Increase interest in science, focus on recruitment
 - Computer science
 - Girls
 - 13-15 (Norwegian Ungdom school)



The ArTe vision

- The vision of ArTe is disseminating IT issues to Norwegian and International teen-agers (13-15) with focus on creativity, cooperation, and openness of processes and content.



Choices

- Web site artentnu.com 12,343 visits, pictures, videos, new media art, open source tools
- Competition
 - call, jury ++, first deadline 31 October
- Book: physical – digital
- Disseminating events: Researcher Days, Night, ITovation, visits to schools
- In the media, chat.no, caplex.no, tekna, network

Arte Goals/Criteria

- 1. Openness
- 2. Support for teenagers
- 3. New media art
- 4. Cooperation and sharing
- 5. Information Technology
- does this tool make its users aware of IT issues, such as programming?”.

Tool - Arduino



Arduino

beautiful and tangible



```
void loop()  
{  
    //Turn on the output  
    //signal for pin 10  
    digitalWrite(pin,  
        HIGH);  
    delay(d);  
    //Turn off the ouput  
    //signal for pin 10  
    digitalWrite(pin,  
        LOW);  
    delay(d);  
}
```

Tool: Audacity

Audacity supports sound recording, editing, and saving in different formats. It is simple to use with its tape-style layout which offers rewind, fast forward, play, and record functions.

Tool: GIMP

GIMP supports picture manipulation and retouching. The program comes with several languages in addition to English. It supports the majority of picture file formats, such as jpeg, png, gif, xcf (which is the native format of GIMP) and the native format of photoshop, PSD.

Tool: Processing

Processing is a text programming language designed to generate and modify images, animation, and interaction. Beginners are able to write their own programs after only a few minutes of instruction.

www.processing.org

<http://www.openprocessing.org>

Tool: Scratch

Scratch is a programming language which makes it easy for pupils from the age of 8 to create their own interactive stories, animations, games, music, and art — and to share their creations on the web. Scratch is developed by the Lifelong Kindergarten Group, at MIT Media Lab.

<http://scratch.mit.edu/>

Tool: Inkscape

Inkscape is a graphics editor using vectors. The main difference between a file created with a vector based editor compared to a file created with pixel based editors (like GIMP), is that images can be scaled up more easily. Inkscape uses the W3C standard Scalable Vector Graphics (SVG) file format, although it is possible to save in other formats as well.

Tool: Tuxpaint

Tux Paint is a free drawing program for children ages 3 to 12, which combines an easy-to-use interface with fun sound effects. It is ideal for those who want a basic drawing tool with which one can be creative from the first minute.

Criteria: Openness

The source code of all tools is open and available for inspection. All of the tools except Scratch are developed according to a process that is open to newcomers. GIMP, Audacity, Inkspace, OpenOffice.org, and Tux Paint support open formats. Arduino and Processing are programming languages which operate on text files. Scratch saves files in its own proprietary format sb.

Sharing of content and software

Criteria: Support for teenagers

Scratch is specifically designed for children from the age 8 and for teenagers. Tux Paint is designed for children between the ages of 3 to 12. All the other tools are not specifically designed for teenagers.

Criteria: New media art

Arduino can be used to develop and program installations. Processing has been developed by artists to be used by artists who want to program artistic pictures and animations. Audacity is designed to manage music files. GIMP, Inkspace, and Tux Paint are picture manipulation programs. Scratch is designed for digital storytelling, while OpenOffice.org enables the user to develop powerpoint-style animations and text files.

Criteria: Cooperation and sharing

All tools come equipped with a web sites that provides manuals, examples, and forums for discussion. Scratch and Tuxpaint provides mechanisms for sharing and remixing media. Scratch has more than 300.000 (2009) 1M (May 2010) projects available created by 50.000 contributors.

Criteria: Information Technology

Arduino and Processing are based on programming. Scratch has been designed with the specific goal of making programming attractive to teenagers and children. The other tools do not require programming.

Research

- SArt software art
- SArt <http://prosjekt.idi.ntnu.no/sart>
- Literature review
- Participation to 3 artistic projects



The open wall



Literature review

- Who: artist, IT engineer, researcher, curator, gallery, audience
- Why:
 - Learning about cooperation, Innovation of products and interfaces, Aesthetics in computing, Develop and exhibit IT based artworks, Reflection on IT societal issues through art, Dissemination
- What: tools, technology
- Where: museum, open space, lab

Research questions in SArt

How can we improve the development process of software dependent artworks and projects, in terms of software development, maintenance, upgrade and usability of the artwork?



Artist Samir M'kdami
PhD st. Salah U.
Ahmed

Relations

author

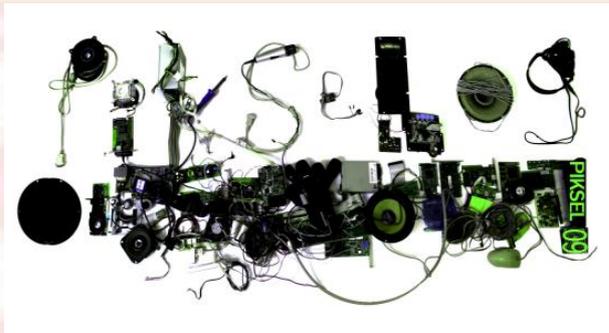
content

tools

format

licenses

audience



- RQ1 Which are the main OSS **tools** for ACP?
- RQ2 How do we characterize the OSS **tools** for (ACP)?
- RQ3 Which **authors** use OSS **tools** for ACP?
- RQ4 Why do **authors** use OSS **tools** for ACP?
- RQ5 How do **authors** choose OSS **tools** for ACP?
- RQ6 How do **authors** use OSS **tools** for ACP?
- RQ7 Who are the **tools** developers (**inventors**)? Is the **artist** the developer?
- RQ9 Which is the relation between **artwork** and **tools**?
- RQ10 Is the **tool** an **artwork** itself?
- RQ11 To what degree is the **audience** aware of the OSS **tools**? Is it possible for the **audience** to engage not only with the **artwork** but also with the **tools**?

Why do we human beings need new technology?

- to make our work more **effective**. Think about the plow, invented several millenniums B.C, or our beloved computer invented half century ago
- to make our life go **faster**, think about the train, airplane, telephone, and internet
- to make our life **lighter and enjoyable**. Think about cinema, radio, television, electronic games, and I-Pod

In ArTe

In the ArTe project we see technology as a possibility to introduce in our life more **creativity**, **cooperation**, and **openness**

Sewing as a way of seeing



the lilac gown

The LED on the **lilac gown** displays a beautiful yellow color to symbolize day light. The LED switches to a deep blue night color and again to yellow. Day after day. By moving my arms, jumping, walking, falling down I alter this cycle. The more I stress the less I am able to observe the cycle of life. I cannot really observe myself. I need somebody else to tell what they see on my gown LED. Beautiful or less beautiful patterns can arise while I busy myself. These patterns do not always match the lilac color of my gown.

the lilac gown (cont.)

I understand more and more the programs that govern my gown but I do not fully understand the relationships between my movements and its effects. I needed the help of both my student Hallgeir to write the code and my friend, fashion design Urd, to find my unique lilac Lilypad gown, and I need Daniela who believes in science, to observe my gown and its program to find the motivation to change. I do not fully understand the details of acceleration but I am aware I will. I know that the beautiful cycle of yellow and deep blue will come again and again.



Future

Teaching

- Experts in Team, Fourth year course taken by 1800 students at NTNU, 3 weeks full time 30 students
- Art and software since 2004, 30 students per year

Research/practice

- PhD positions NTNU
- Art projects participation
- ArTe 2.0 by Culture Council of Norway