

ArTe **Open Source Software**
Tools for creativity

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Bolzano 11.12.2009

Goal of this presentation/conversation

- ❑ dissemination
- ❑ research

artentnu.com

Structure

- ❑ Context
- ❑ Dissemination (5-25)
- ❑ Choices
- ❑ Results/Evaluation
- ❑ Research (26-35)
- ❑ Future



Norwegian University of Science and Technology

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



Norwegian Research Council - PROREAL

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

- 2 The ArTe contest encourages students of age 13 to 15 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 will focus on eight open source tools evaluated according to the ArTe goals.

The ArTe contest encourages students of age **13 to 15** 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 will focus on eight open

source tools evaluated according to the ArTe **goals**.

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 10747 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

Media Formats

- ❑ Sound: open (ogg FLAC, ogg Vorbis, ogg Speex);
proprietary (mp3, mp4, m4a, wav (Microsoft), aiff (Mac))
- ❑ Pictures: open (xcf, png, svg, tiff); proprietary (jpeg, gif)
- ❑ Video: open (ogg Theora); proprietary (mov, wmv, avi, mpg)
- ❑ Document: open (odf, pdf, html, xhtml, xml, css z);
proprietary (doc, ppt)

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 the output  
  signal for pin 10  
  ON  
  digitalWrite(pin,  
  HIGH);  
  delay(d);  
  //Turn the output  
  signal for pin 10  
  to OFF  
  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: OpenOffice

OpenOffice offers word processing, spreadsheets, presentations, graphics, and databases.

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.

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.

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 eight 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.

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 of the eight 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 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
- 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

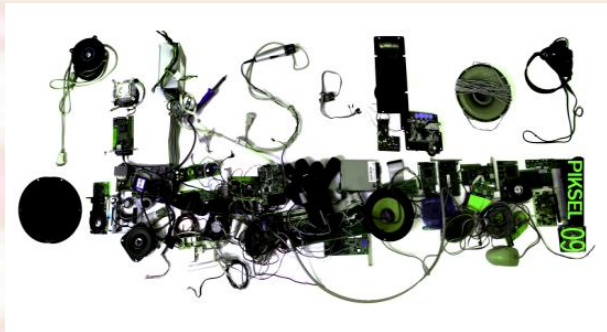
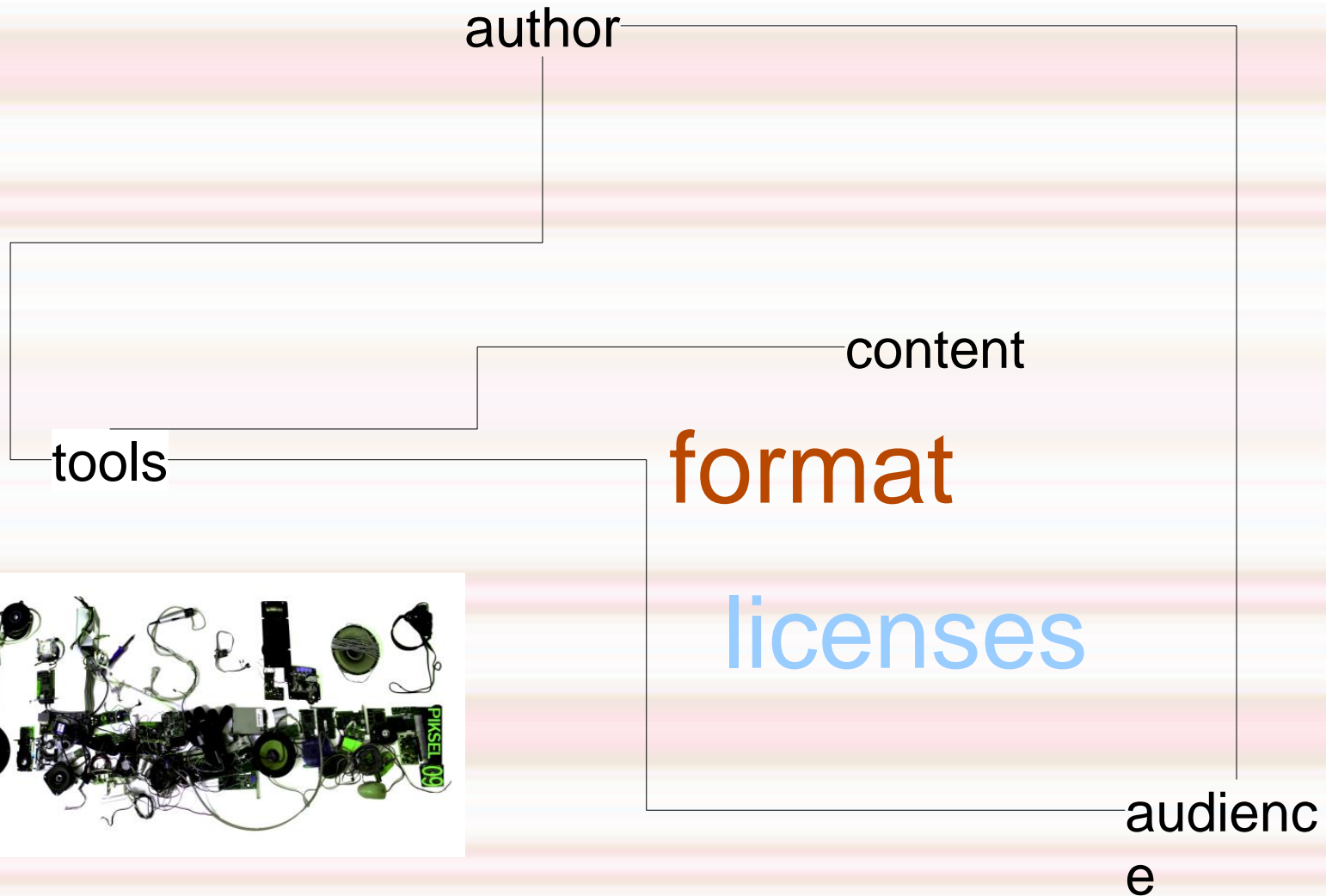
Research questions in SArt

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



Research questions (a)

- ❑ RQ1 (tools) Which are the main OSS tools for ACP?
- ❑ RQ2 (tools) How do we characterize the OSS tools for (ACP)?
- ❑ RQ3 (authors - tools) Which authors use OSS tools for ACP?

Research questions (b)

- ❑ RQ4 (authors – tools) Why do authors use OSS tools for ACP?
- ❑ RQ5 (authors – tools) How do authors choose OSS tools for ACP?

Research questions (c)

- ❑ RQ6 (authors – tools) How do authors use OSS tools for ACP?
- ❑ RQ7 (authors – tools) In which way do authors participate to the software developing process of the tools?
- ❑ RQ8 (inventor – tools) Who are the tools developers (inventors)? Is the artist the developer?

Research questions (d)

- ❑ RQ9 (content – tool) Which is the process behind the artwork (content) galleries of the tools?
- ❑ RQ10 (tool – content) Is the tool an artwork (content) itself?

Research questions (e)

- ❑ RQ11 (audience – tool) 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? And if that is the case, in which ways and to what degree? Does the audience contribute to the creation of the artwork by accessing its codes and changing it? Is this a case of ‘collaborative/distributed creativity’?

Future

? Dissemination

? Experts in Team 2010

? Fourth year course taken by more than 1000 students at NTNU

? 3 weeks full time 30 students

? Art and software since 2004, 30 students per year

? Research

? PhD positions NTNU

? deadline 1.st December

? EU and and NFR applications submitted

? ++