Open Source Software for Entertainment

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Abstract. In this tutorial, we explore open source software practices and tools that are suitable for a growing number of creators of interactive and playful systems. The introduction of open source tools such as Processing and Arduino has motivated a broader participation of technical and non-technical users in the creative production of interactive systems. Maker communities meet regularly and they share resources and knowledge for creative hacking, fun, and networking. In this context there are two main issues: on the one hand, software creation practices, based on collaboration and sharing, on the other hand, the respective end-user programming tools for artists, hobbyists or children. This tutorial presents a coherent overview of related work and our own experiences in the organization and running of maker workshops. It encompasses creative sessions whose final goal is to inspire the participants to experience open software practices and tools. This goal can divided into three sub-goals: 1) Technical (Interactivity, multimedia) 2) Artistic (poetic message, playful, experimental) 3) Open (sharing, reuse and participation). As a side effect of the study, the participants will cooperate and get to know each other and learn examples of new media prototyping tools and sharing platforms. The tutorial proposes a set of initial research questions which will challenge the participants to explore the relationship between Open Source Software and Entertainment.

Keywords: Open Source Software, Art, Creative processes, Arduino, Scratch, Processing, Maker communities

1 Introduction

Tools for creativity enable digital creators, professionals or hobbyists, to realize their desire for expression with powerful development environments that support animation, music, or video editing tools [10]. Open source tools for creativity, such as Processing (http://processing.org), Arduino (http://arduino.cc) [3], and Scratch (http://scratch.mit.edu) [9] have their roots in this inter-section of open source software (OSS) and creativity. These two fields of study and practice are important for the work presented in this tutorial. The aim of the tutorial is to stimulate participants to acquire knowledge and basic skills about creative, playful and open software engineering practices and tools. The goal of the tutorial is to disseminate knowledge on existing open software tools and community projects practices as well as facilitating simple practical activities with the purpose of stimulate reflection.

adfa, p. 1, 2011.

2 Open Source Software

A software system is open source if its code is available to everybody for inspection, use, and modification. Users of OSS are not paying customers but potential software co-developers. OSS was born as a movement based on contributions of volunteers. However, an increasing number of companies are getting involved in OSS projects [2]. Use and further release of modified version of an OSS system are regulated by a license. OSS is much more than the possibility to change the code. The most important characteristics and success factor of OSS projects are associated with communities of users and developers. The degree of activeness of the community is crucial for an OSS project. Each user of an active community is not isolated but part of a community. Members of each community are connected and help each other via mailing lists, forum and IRC channels.

3 Joy of creation as entertainment

The role of the active user in entertainment has been explored in the entertainment computing literature. Nakatsu et al. [7] presents a framework for understanding entertainment which divide experiences in passive (like reading and watching movies) and active (like doing sports and creating art). The inner joy of creation and unselfish cooperation has often been identified as an important asset of the OSS developer culture. Around these issues of creation and cooperation, Castells [4] proposes analogies between the world of OSS and the world of art. Castells anticipates art as a growing area of the Internet, stating that 'open source art is the new frontier of artistic creation'. The Internet not only serves as a means for distribution of artifacts, but also serves as a shared platform for a process that aims to create new artistic artifacts. Several difficulties have been faced into the collaboration between distant persons. This is an issue shared with most intellectual activities. In previous work [11] this issue has been identified, when computer engineering students are working together with non-engineers or other branches of engineering. Applying and adapting methods from the field of social psychology have proven to be successful in optimizing the collaboration in heterogeneous groups. These methods approach the issues in a social manner and generally aim at optimizing the social issues and in effect optimizing the end results of the collaboration. This has proven successful when applied on students with a multi-disciplinary background working with innovative, new media, solutions. Innovative and creative businesses are often found within the field of computer science. These are often faced with similar issues, for instance when one or more stakeholders to a project have different backgrounds than the rest of a team. Or when the task is to "think outside the box" and develop creative solutions. The social issues experienced in these settings may be an obstacle that results in sub optimal solutions.

4 Description of the Tutorial

This tutorial builds on our experience in facilitating and studying creative processes. [4] [6] and focus on OSS and its intersection with entertainment.

Audience: The audience for this tutorial comprises software engineers, researchers and PhD students interested in creative technologies and processes. The participants will have to bring their own laptop (Windows, Linux, or Mac). It is an advantage if the participants have already installed Processing and Scratch tools, but this is not mandatory. No practical programming knowledge is required. Participants will be able to work in small groups to be able to test and experience the methods presented in the tutorial. The organizers will exploit their networks to improve recruiting to this tutorial.

Inspirational Questions: The tutorial is motivated by several *inspirational research questions* that are intended to be explored and be a basis for reaction. Examples of questions are:

RQ1. Which is the relationship between OSS and entertainment computing?

RQ2. How can an understanding of OSS communities enhance state of the art in entertainment computing?

Tutor Background: Jaccheri is a professor at NTNU, Norway. She has twenty years' experience of teaching and researching and she has been involved in the supervision of more than 12 PhD students. She has published book chapters and papers and has given presentations at several universities in Europe. Her motivation for developing this tutorial is to disseminate the bulk of knowledge and practical learning methods with an International audience. Preliminary versions of this tutorial have been tested with University students and in related tutorials [4].

Structure: The format is a full day tutorial. A preliminary structure of the tutorial is available at http://artentnu.wordpress.com/icec2011-tutorial/ together with all the slides, which can be downloaded and reused. See also Table 1. The first half of the tutorial will include presentations on the background of the topics included, different tools that leans well to OSS and art, several different strategies for enhancing creative collaboration in teams and an array of examples illustrating the potential in the intersection of OSS and art. The second half of the tutorial will include experience and creativity based learning sessions. The participants will work in teams on small creative tasks using the methods presented earlier. Several work sessions will be held with a reaction and discussion part at the end of each. This will introduce the participants to some of the obstacles that can occur when working in a creative team and several of the strategies that can either avoid or address these issues.

Table 1. Structure of the day

Time	Activity
09:15 – 10:00	Computer art and entertainment
10:30 – 11:15	Open source software
11:15 – 12:00	OSS, art and entertainment
14:00 – 15:30	Creative session 1: (a) Choose characters; (b) Experiment with motion, looks, sound, sensors (Pico Boards will be provided by the organizers).
16:00 – 17:15	Creative session 2: (c) Develop a story board; (d) Programming, (e) Share. 17:15 Final discussion and conclusions
Breaks are from 10:00 - 10:30 and 15:30 - 16:00; Lunch is 12:00 - 14:00	

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