Japanese Anime Production Support System with Digital Storyboards

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Abstract. Storyboards are used in the beginning stages of making animation to explain the story or screenplay. This paper proposes a system which assists with storyboard writing and the production process. This system is used with a tablet that allows for input with a pen. It automatically calculates the number of cuts and time required for each scene and can automatically produce a schedule from storyboards. This system makes management for overall animation easy.

Keywords: *Animation production, Storyboards, Schedule*

1 Introduction

The number of animation titles on TV in Japan is increasing in recent years. In 2015, 233 new animation titles were produced throughout the year, while there were 108 continuing titles, making this the largest since 1963 [1].

Animation is produced by around 100 staff members working in directing, screenplay, character design, art direction, original drawings, video, art, mastering, shooting, and voice acting. A portion of this is also often outsourced [2]. It is therefore important to convey the director's designs to all staff through the production process in order to avoid delays and decrease the number of accidents during production. It is especially important in production management to ensure that the director's storyboards and the calculated length of each cut on the production process table match since the total length of an anime show is precisely decided. However, since animation production in Japan calculates time by combining the number of seconds and the number of frames, mistakes are prone to occur which causes a huge mental burden to the director and staff. Since calculating the wrong length causes mistakes in the total downstream process such as original art and video, this can result in the issue of materials being needlessly made and increased communication due to constant reorganization of the production process, putting pressure on the production industry.

This study proposes an animation production support system that makes production of the director's storyboards and management of the production process consistent.

2 System Design

A storyboard app is created that uses a tablet PC as a pen tablet allowing one to make drawings similar to that of storyboards using conventional paper, and also

makes it easy to calculate lengths with a combined number of seconds and number of frames. We will learn about the storyboarding management and drawing features of a tablet necessary for creating storyboards, design a UI, and develop a prototype focusing on ease of use for directors.

Automatically producing a process management table from the layered structure of scenes and cuts created by the director and from the time lengths reduces workload and mistakes when starting work. It also makes staff assignments for each cut, assists in making verifying and updating work status simple, and achieves the ability to individually edit areas that need more detailed scheduling.

In addition, it assists in managing the viewing of storyboards for staff involved in animation production. Fig. 1 shows the system interface.

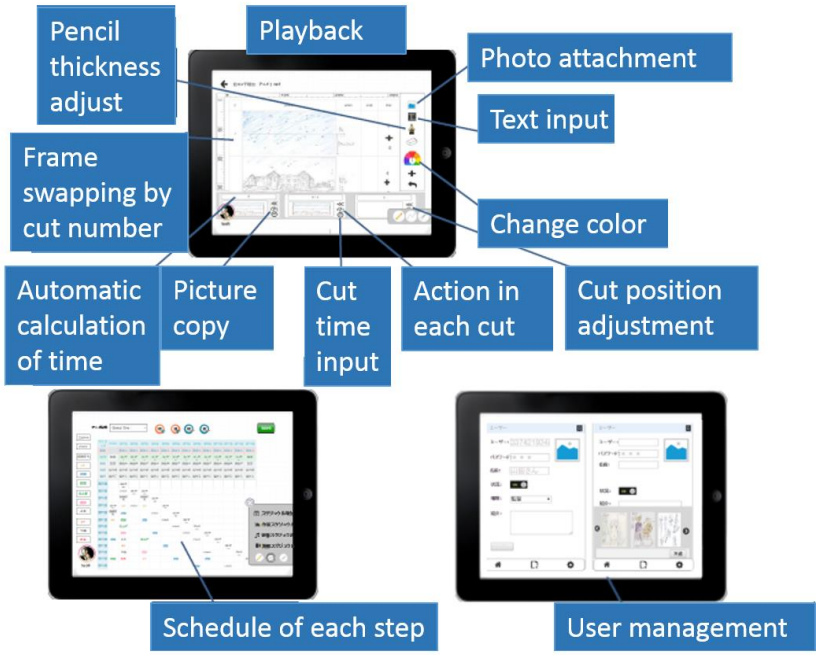


Fig. 1. Up) Storyboards Drawing tool Left) Scheduling tool Right) User management tool

3 Implementation

Fig. 2 shows the system structure (system transition diagram). A homepage displays when a user logs in. From there, they can jump to the following three main features.

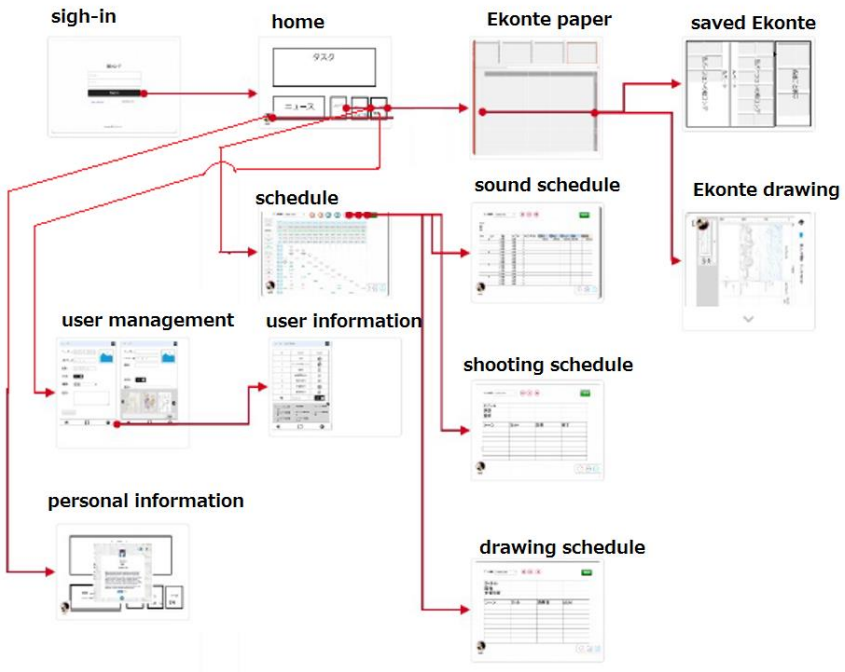


Fig. 2. Transition diagram

3.1 Storyboard drawing

The storyboard drawing feature allows for drawing on the spot with a pen input on a one page, five column drawing screen (the same as a storyboard paper used in Japan). Colored handwriting, text, and straight lines can be entered here. Text can be inserted from the keyboard using the text box. Photos and existing illustrations can be called from an image file and pasted in the drawing area.

Columns are automatically filled when a cut that is no longer needed is deleted when drawing. Conversely, columns are automatically carried over when adding a new cut in between columns.

Here, lengths can also be automatically calculated. The number of seconds for each column arbitrarily set by the user is automatically added up, allowing them to know the total length. It also can calculate the length in frames from the number of frames per second. Since a calculator is taking care of the parts which conventionally were calculated manually, this saves time and also avoids any incorrect calculations.

The user can also playback a storyboard by displaying the columns in order according to the number of seconds for each column that they have set.

Previously drawn storyboards can also be displayed in a list and be referenced. Storyboards are stored in this area when saving them.

3.2 Schedule management

A sample schedule can be automatically generated in the schedule management screen from completed storyboards. This is generated by counting back the amount of cuts from the deadline. Afterward a schedule can be easily put together as the user finds suitable. This also allows for modifications in accordance with the production process.

Besides an overall schedule, individual detailed schedules can also be assembled for sound, shooting, and drawing.

3.1 User management

Staff data can be browsed by registering the production and drawing staff involved with a work, and browsing restrictions for storyboards can also be managed.

4 Conclusion

A storyboard system was proposed which assists with reducing mistakes in the production of animation by controlling storyboards on a tablet PC and automatically generating schedules.

Verification tests will be conducted in the future while furthering implementation of the system in order to verify the usefulness of the support methods and system proposed by this study. Tests in the animation contents industry are planned. Actual animation directors will be asked to use the system and their physical and mental reduction for production management will be studied using a survey to measure how much production time was shortened and identify how much easier storyboard quality and creation became. Overall judgment will be done through a survey using a five-step assessment and filling out comments.

References

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