A Manga Creator Support Tool Based on a Manga Production Process Model – Improving Productivity by Metadata

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Abstract
Manga is a Japanese style comic. Nowadays, production of manga in the digital environment is widely accepted since authoring/drawing tools on PC have become popular. However, the digitalization of manga production is only in the later stages of the whole production process. The goal of this research is to improve productivity of manga production using information technologies in the earlier stages of the process. A fundamental problem exists in information resource management in the production process, e.g., reuse of unused scenarios for a new content, revision of existing character image. In this paper we propose a manga production support tool which helps creators (re)use existing resource in the production process, e.g., annotations attached to design memos, communication history, and so on. The tool uses metadata for various resources used and created in the production process. This paper describes the background of the study and overviews the production support tool.
Keywords: comics, digital environment for Manga production, linked data, Manga, metadata
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1 Introduction

Manga is a comic conformed to a style developed in Japan and has been known as a representative of modern Japanese pop culture. Manga as a genre of publishing is characterized by the variety of its themes, genres, drawing styles and publishing styles. Regardless of the variety, commercial production process of manga consists of several steps before drawing pictures. A manga creator uses various information resources in the production process, e.g., books and dictionaries to collect facts used in a story, images of characters created by him/herself in a previous works or by other creators, and so on. The creator produces various intermediate products, which may not appear in the final product but useful in other production activities. Thus, he/she uses and produces many different resources in a manga production. The goal of this study is to build a tool to help creators find, use and organize those resources used in the manga production process in order to improve the productivity.

In general, production process in the current commercial environment is not well recorded. It is still difficult to access the resources useful for manga production because those resources are mostly papers despite that the creators and their collaborators, e.g. editors and assistants, are working in a digital environment. In particular, semantic relations among the resources and intermediate products are not well documented, e.g. relationships among characters, revision history of character image design, and so on.

Many digital manga are published as the collection of the image data, which means paper page is replaced by digital image. Every single page contains many components with which the creator has some related resources used during the production process, for example a document about a town in the real world used as a model in a story. Those resources are in various forms stored in various location – a document on the Web, a photograph in a PC, memorandum on a paper, and so forth. Therefore,

management of the resources associated with each page is crucial for improving the productivity because manga creators cannot find those resources easily in a traditional commercial production environment.

The goal of this research is to solve this problem and help manga creators use the resources and increase the productivity. Our approach is to record the production process of manga and link those resources and the intermediate and final products by semantic relations. The production support tool proposed in this paper helps creating, editing and managing variety of resources including discussion memos, rough sketches, story plots, and so forth. These resources are maintained with their metadata expressed in a reusable and interoperable form. Interoperability is important not only for sharing metadata among different players involved in the production process but also for reusing the resources in another production process over time. In our tool we use Linked Data (or Linked Open Data) technologies because they are crucial for reusable and interoperable metadata (Berners-Lee 2006). The main functions of this tool are to visualize and trace the production process and the change of their contents. These functions enable a creator to link useful resources from/to his/her products. Those links will help production of manga in his/her current production process and/or that in the future with reasonably low costs.

2 The Design Process of Manga Production and Its Materials

The design process determines important steps in the manga production. First, a manga creator has to make up an overall and clear idea of his/her product. He/she has to sort many ideas and sort them into pictorial manga expressions. In some cases, manga is produced not by a single artist but by a group of people who have different specialties. In a commercial production of manga, an editor supervises the whole process collaborating with a creator(s) and help him/her brush-up the manga for publication in accordance with the commercial goal and restrictions. In a large production process, upper and lower streams of the process are carried out by a different group of people, e.g., creators and storywriters work in the upper stream and authoring tool operators work in the lower stream. Thus, it is crucial to utilize a tool to help the participants share information and resources used in the production process.

In general, the design process of manga consists of three steps – narrative planning, scripting, and storyboarding. Narrative planning is to create the core features and entities included in the story, e.g., characters, places, and events. These elements are not only described in a text but also expressed as visual information, e.g. pictures and sketches. These elements may have close relationships each other but each of them is noted fragmentarily.

Scripting is to construct the story of manga from those elements made in the narrative planning step. Text boxes aligned along with the story line is often made to overview the structure of story easily. This text-box scripting style is commonly used in Japan to write and brush-up a story not only for manga but also story-based works such as video programs.

Storyboarding in manga production has the same role in the movie production but its format is quite different. A storyboard in manga production is a simple expression of the script of manga allocated page by page, indicating a layout of frames on each page, the compositions of picture on each frame and placement of word balloons.

Thus, the ideas created in the narrative planning step are expressed as a series of scenes in the scripting step. Then, the scenes and their elements are expressed in a graphic form (or a form oriented to graphic representation) in the storyboarding step. In each of the three steps, several different resources and their metadata are created. In our study, we have designed a metadata model to describe the entities in these steps, i.e., elements of works, story structure, and graphic object as the resources about manga. We use Resource Description Framework (RDF) to encode the metadata and to link the resources.

3 Production Support Tool based on Metadata for Manga Production

We have experimentally developed a manga production support tool, which helps editing intermediate products of manga as well as metadata about the resources used in the manga production. The metadata is stored in an RDF repository and searchable via SPARQL which is the query language for RDF databases. The production support tool consists of four tools to edit each type of intermediate products – setting lists, box scripts, annotations named plot-it, and storyboard. Figure 1 shows the entities of manga production with their relations described as metadata and the intermediate products include them (because of the limitation of the space, the detailed metadata schemas are not included in this paper).

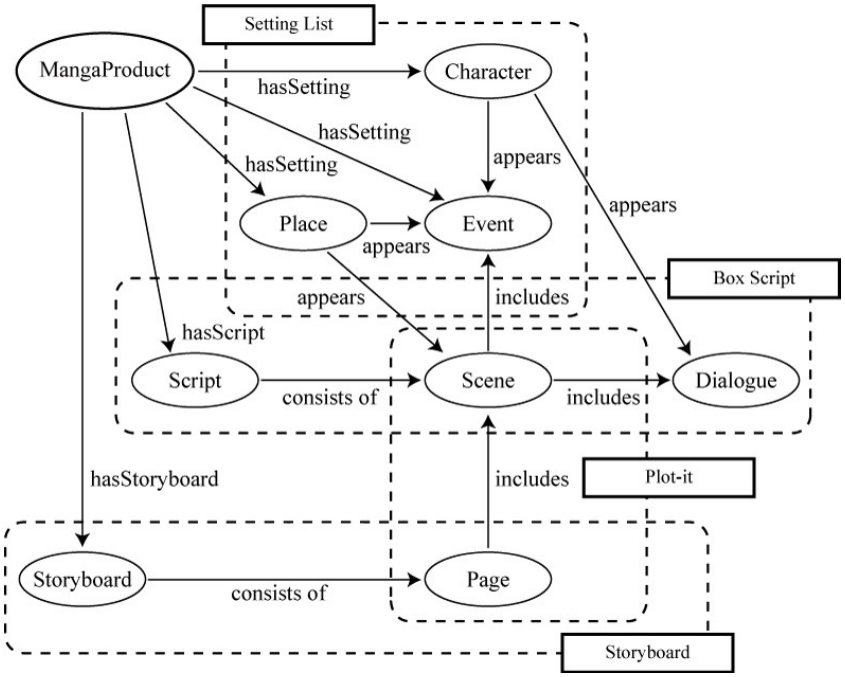

Figure 1: The entities of manga production with their relations and the intermediate products include them

Setting list is a list of notes about the ideas and settings like character, place and event of the story, all of which are created in the first step of the production process. Every note is a mixture of texts and images because of the nature of manga. URLs of the resources accessible on the Internet may be included in a note.

In the second step where box scripts are created, a box-scripting tool which help create a table of scripts representing a series of scenes created using the elements included in the setting list. We can create a story for manga from the table of scripts.

The last step is designing the graphic expression from the story, which is the most crucial process in the manga production. The production support tool helps this process by plot-it and storyboard editor. Plot-it helps to assign each scene to the area on the set of pages. Storyboard editor is for editing a storyboard of every page on a canvas. We use Scalable Vector Graphics (SVG) to implement these tools in order to use XML as a common platform for the implementation. Figure 2 shows a screen shot of the user interface of the combination of three tools, setting list, box script and plot-it when we design the story structure and graphic expression.

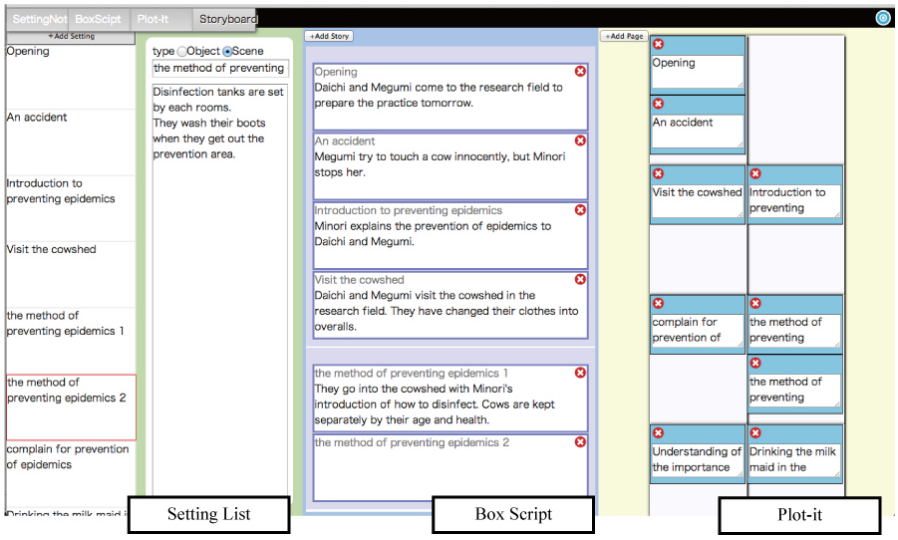

Figure 2: User Interface of the combination of setting list, box script and plot-it

4 Related Works

The Movie Script Markup Language (MSML) (Rijsselbergen 2009) is a document specification for the structural representation of screenplay narratives for television and feature film drama production. MSML has models to describe scene, structure, timeline of screenplay and 3-D animation object. MSML is currently serialized into XML documents and is formally described by a complement of an XML Schema and ISO Schematron schema.

Pellegrini shows how Linked Data contributes to existing value chains in the content industry by discussing a BBC (British Broadcasting Corporation) use case in the utilization of semantic metadata for the management of news content along the content value chain (Pellegrini 2012). It discusses the benefits of semantic metadata and how semantic metadata can be applied within the existing news production process, from contents acquisition to contents consumption by users.

5 Discussion and Conclusion

In this paper, we proposed a production support tool for manga to improve the productivity by linking resources and intermediate products to the final product and to the production record via metadata expressed in RDF. As the next step of our research, we will evaluate the usability of our tool and productivity improved by our tool in more practical production processes. As serial publication of a manga in a magazine is the most basic and popular publication process in commercial productions in Japan, we need to test our tool for the serial publication. In this case, we are expecting that our tool would perform well because the resources produced in previous publishing processes would be reused frequently in the iterative production cycle.

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