

Story-Map: iPad Companion for Long Form TV Narratives

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ABSTRACT

Long form TV narratives present multiple continuing characters and story arcs that last over multiple episodes and even over multiple seasons. Writers increasingly take pride in creating coherent and persistent story worlds with recurring characters and references to backstory. Since viewers may join the story at different points and different levels of commitment, they need support to orient them to the fictional world, to remind them of plot threads, and to allow them to review important story sequences across episodes. Using the affordances of the digital medium we can create navigation patterns and auxiliary information streams to minimize confusion and maximize immersion in the story world. In our application, the iPad is used as a secondary screen to create a character map synchronized with the TV content, and to support navigation of story threads across episodes.

Categories and Subject Descriptors

H.5.2 [Information Interfaces and Presentation]: User Interfaces - *Prototyping, Interaction styles, Graphical User Interfaces*. H.3.3 [Information Storage and Retrieval]: Information Search and Retrieval – *information filtering*

General Terms

Design, Experimentation, Human Factors, Standardization

Keywords

Interactive Television, Dual Device User Experience, Second Screen Application

1. INTRODUCTION

Serialized drama has long been one of the most critically acclaimed and popular forms of television, and plots have become more complex over the past decades [8]. The growth of digital formats has increased the consistency and continuity of television writing, by making the single season into a story-telling unit, and keeping events from past seasons current in viewer's minds, through distribution on DVDs and web-based fan activities. As a result, writers have incentives to create complex multi-character

stories with plot-lines that arc across multiple episodes and even multiple seasons. But more complex plots and larger casts of recurring characters can leave viewers confused. Since the primary delivery is still one episode per week, new viewers need to be given contextual information about what has happened before, if a show is to gain viewership mid-season; and loyal viewers will also need reminders of characters or plot events that may be picked up from months before. There have been several attempts to provide this information, but they often risk "spoilers" that reveal plot points prematurely, or they provide information that is itself overwhelming and not completely relevant to the current scene. HBO GO for example, provides card-like information elements next to a streaming feed of a serial drama like Game of Thrones [5], and the last season of Lost was introduced by an annotated replay of key scenes with subtitles explaining lines of dialog that referenced previous events. Such attempts at simultaneous annotation show that viewers need additional guidance synchronized with the unfolding of the story. The limitations of existing applications make clear the design goals of increasing comprehension and immersion while minimizing distraction.

Since narrative is a fundamental human cognitive strategy [2] [12], and media like written books or recorded moving images increase our cognitive scope by allowing us to externalize memory functions [4], media forms that allow us to consume more complex narrative structures offer promise for increasing cultural expressivity and cognitive power. Therefore, applications that support comprehension and immersion in complex television dramas are a useful focus for digital invention.

The work at the eTV lab at Georgia Tech assumes an environment, which is rapidly becoming realized: television series available on-demand in multi-episode online archives; and multiscreen consumer configurations with all the affordances of computation fully integrated with television content. The Story-Map application is meant to run on a two-screen system in which digital television is available on a large browser-equipped screen and a smaller hand-held tablet that provides auxiliary information. We have implemented the system on both devices as web applications in HTML5. The application includes character maps, relationship iconography, and reviewing compendiums that access the content at scene-level granularity across multiple episodes.

2. RELATED WORK

StoryLines [11] explores a timeline-based method of navigating news and episodic television in the context of rich archival resources. Using Battlestar Galactica and news coverage of the Arab Spring as representative content, this prototyping project used a tablet computer as a navigation device. Users could

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identify individual story threads within a complex multi-threaded story environment by filtering the items on a composite timeline, which then split into multiple timelines. For example, viewers could follow the story of a romantic triangle across multiple episodes, and could see the component scenes in the order in which they were broadcast (which included some flashbacks) or in chronological order within the fictional time scheme. We identified such stories as “multisequential” because they could be experienced in multiple coherent sequences, which the timeline navigation organized and presented in relationship to one another. In addition the StoryLines project included an example of “multiform” story in which the same story beat existed in variant version, in this case a story of a date that could develop in multiple ways depending on choices such as whether coke or vodka was served. The tablet interface provided a way of replaying individual scenes and juxtaposing the variants without losing track of which prior choices led to which results.

Cesar et al. identify four major usages of the secondary screen in an interactive television environment, to control, enrich, share and transfer video content [3]. Our application builds on the concept of control as it allows users to navigate and select an episode from a list and presents real time enhanced information in the form of the character map about the selected episode. The concept of transfer is explored in relationships and thematic recaps, which the user can see even after moving away from the television screen. Motorola Mobility [1] prototyped a companion device experience that enhances TV viewing by providing auxiliary information and media on a second screen. The additional media is semantically related and synchronized, in terms of timeline, to the TV content. A three-week field trial in 11 households was conducted and the participants used the prototype as a companion to their TV shows, the overall feedback to the concept was quite positive with 10 out of 11 participants saying they enjoyed the experience. The researchers concluded that the prototype allowed participants to better connect with their TV shows and have an enriched social life around the TV by providing holistic infotainment.

The Game of Thrones character relationship tree infographic [9] created by a fan, Magdalena Maslowska symbolically represents characters, their relationships and their affiliation to houses. Due to the large number of characters, complex relationships and elaborate back-stories, it can be quite overwhelming for new viewers to start watching the series mid-way or for avid fans to keep track of these relationships in their head. The infographic does well to address these issues, but being a static representation of the relationship at a particular point of time, is unable to address the issue of evolving relationships (e.g. enemies turning into friends later on in the series). The viewing aid released by the producers for the computer-based one-screen HBO GO environment includes information synced with individual episodes [5] but some of it takes the viewer out of the frame of the fictional world by introducing production details. It provides additional information about some of the characters in an episode, but leaves a new viewer wondering about the many unexplained characters, relationships, and dialog references in this richly imagined fantasy world, without providing direct links to clarifying information.

In her 1997 book, *Hamlet on the Holodeck*, Janet Murray offers a prediction of a “hyperserial” that would grow out of the digital delivery of television content [10], predicting many of the applications such as virtual places and point of view information that have become staples of web sites associated with dramatic series and films. Henry Jenkins in *Convergence Culture* called

attention to “transmedia storytelling” based around film and television properties, in which games and fan participation structures are not just marketing extensions but integrated parts of the canonical world [6]. In a web posting expanding upon his book, Jenkins identifies four characteristic functions of transmedia: offering back story, providing maps of the world, offering another character’s perspective on the action, or deepening audience engagement through participation [7].

The Story-Map application builds upon earlier experiments with tablets used as secondary synchronized screens, and upon the concepts of the hyperserial and transmedia storytelling, by creating an application that is intended to foster the viewer’s understanding and immersion in a complex story-world by making the component parts of the story structure apparent, and fostering multiple paths of coherent exploration.

3. SYSTEM DESCRIPTION

3.1 Setup

The system consists of two main components. The first is the Internet capable television, which displays the television show as streaming digital video and the second is the companion tablet (iPad) application that provides viewers with auxiliary information about the show. The television and tablet applications constantly communicate with each other through a common web server. The television sends information like season, episode and playtime to the iPad, which allows the companion application to display content, synchronized with what is appearing on the television screen.

3.2 Features

The companion app provides three features that augment the viewing experience: Character map, Relationship Recaps, and Thematic recaps (in this case, Shootings by the protagonist).

The prototype was developed based on content from the first season of the FX television series *Justified*. The show chronicles the adventures of U.S. Marshal Raylan Givens as he shoots bad guys, befriends his ex-wife, and struggles to maintain his integrity as a lawman while returning to his native Harlan County which is filled with family members and old friends who have varying degrees of criminality. The show is unusually consistent in creating a dense story world populated by well-differentiated and interconnected characters that appear in multiple episodes.



Figure 1. Real time character map

3.2.1 Character Map

The character map (see Figure 1) is a real time, updating graph of characters and relationships. When a character appears within the television show, their thumbnail image appears in real time on the companion iPad app and a connecting line with an icon represents their relationship with other characters on the screen and in the world of the series. A grayed out thumbnail represents characters that are only mentioned but who have not yet appeared in the series. Characters who have appeared before, but are not present in the scene appear in color but smaller than the characters in the current dramatic scene. The unit is not who is in the frame but who is present in the semantic dramatic unit, the scene which is generally based on a single location and continuous fictional time. In addition, characters are arranged semantically across the area of the tablet screen. In this case, there are three geographical areas that are referred to, the current location of Lexington Kentucky, the outlaw territory of Harlan County, and the organized crime headquarters of Miami. The main character, Raylan, has shot someone in Miami and therefore been reassigned to the Marshall's office in Lexington, where he has to come to terms with his ex-wife, working as a court recorder, and with his father and old friends who are outlaws back in Harlan County. The pilot episode introduces all these relationships, and so it serves as a good testbed for providing an auxiliary screen that supports viewing without distracting from the main focus, the television screen. Icons on the lines connecting characters indicate the nature of the relationships between them, such a gun for enemies, a handshake for friends and allies, and a whole or broken heart for romantic relationships. Touching the character thumbnail brings up a brief bio, which changes to reflect the unfolding dramatic revelations and events without exposing the viewer to "spoilers".

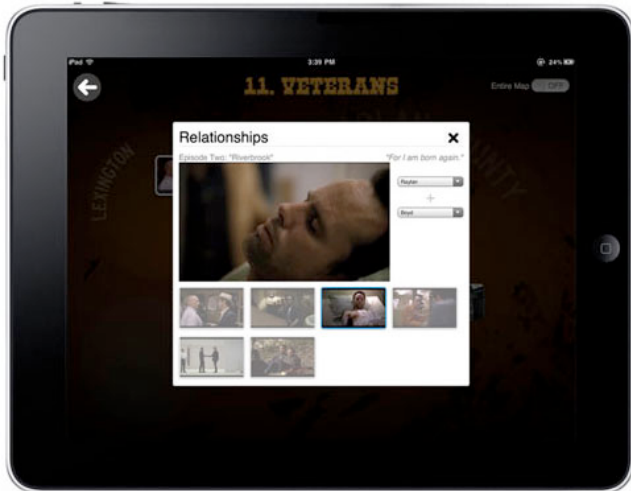


Figure 2. One story thread can be followed across multiple episodes through the Relationship Recap feature

3.2.2 Relationship Recap

The Relationship Recap (see Figure 2) is meant to be accessed from mid-season or late-season episodes to allow fans of the show to review key story threads, and to let viewers who join late in the development of the multi-episode story arc to catch up. The Recap feature is available from the top level of the tablet app, or during a viewing of an individual episode, by tapping on the relationship icon between two characters. Either access point brings up an overlay box that contains thumbnails linked to short video clips that summarize the plot thread concerning two key characters,

such as Raylan and his father, Arlo or Raylan and his nemesis, Boyd Crowder. Two drop-downs within this box allow users to select different combinations of two characters to see the clips that summarize their relationship. The video clips play on the iPad without interfering with the television content and can be made to go full screen, so that a viewer may watch these clips independently of the single episode's continuous streaming on the television screen.

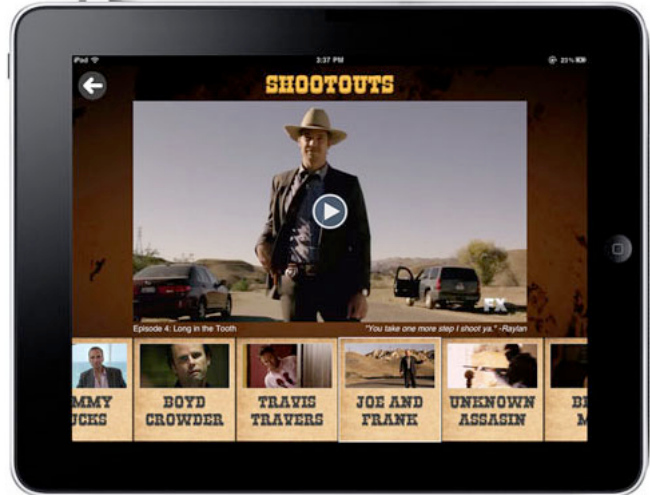


Figure 3. Video clips of shootings by the protagonist

3.2.3 Thematic Recap

The application also offers a thematic recap, in this case, all the iconic cowboy-style shoot out scenes featuring the quick draw hero (see Figure 3). Since these shoot outs are among the most exciting scenes in the series, viewers may want to revisit them after watching the entire season. The interface represents thumbnails of the villains in these scenes, arranged in a horizontally scrollable list in chronological order, with viewing space at the center of the iPad. Viewers tap any of the thumbnails to see the video clip on the iPad, with the option to go full screen. As with the Relationship Recaps, the excerpts are drawn from multiple episodes, but labeled with the episode number, name and a characteristic line of dialog that recalls the dramatic context. The recaps are to be seen when the show is not playing, this avoids simultaneous audio playback interference between the TV and the iPad.

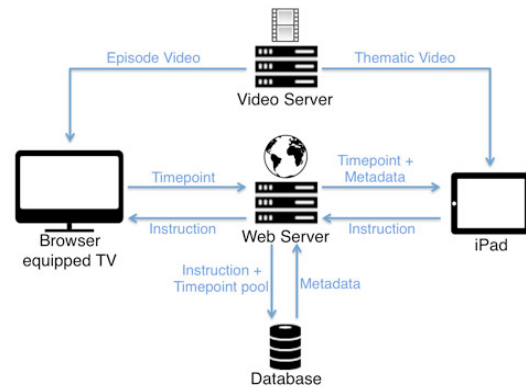


Figure 4. System Diagram

4. IMPLEMENTATION

4.1 Server

The server (see Figure 4) hosts the database that contains tables that keep track of the current timepoint (season, episode, playtime) of the video on the television, maintain a pool of instructions sent by the iPad (like play, pause) and store metadata for episodes, characters and their relationships. It also hosts the HTML, CSS and JavaScript files. The server returns the current timepoint and metadata to the iPad in response to an AJAX request and passes on instructions from the iPad to the TV. Other methods of synchronizing secondary screens like audio fingerprinting exist, but the purpose of this paper is not to explore such technologies, but to quickly develop prototypes that present the kinds of accompanying content that may be shown on a secondary screen in a two screen environment.

4.2 Video Player on a Television/Desktop Browser

The player is a web application that utilizes HTML, JavaScript and CSS. The HTML file contains the embedded flash player that displays the video streamed from a video server. The styling of the page like the background, images, color scheme is defined in the CSS file. JavaScript periodically checks the current timepoint of the video and sends an AJAX request to the server to save it into the database. The player also polls for instructions from the server to play/pause the video.

4.3 Companion App on the iPad

The companion app is a web application that also utilizes HTML, JavaScript and CSS. Being a web app, it can run on any tablet with a modern browser that supports HTML5. The building blocks of the application like the links, character images, relationship links, light-box (the pop up box that appears when a character or relationship is tapped) are specified in an HTML file. The styling of the application like the background, images, typeface, color scheme is defined in the CSS file. JavaScript periodically polls the server by an AJAX request and the server responds with the current timepoint of the video on the television. If the timepoint matches metadata that maps to appearances of characters, these characters and their relationships are shown on the iPad. The application also streams thematic video from the video server and sends instructions to play/pause the video.

5. CONCLUSION

As television series become more consistent and detailed in presenting complex story worlds and multi-episode story arcs, digital companion apps will become more useful in orienting new viewers and in reinforcing the immersive involvement of fans. This project offers an approach based on story structure to establish some conventions for making such aids helpful without creating unnecessary distractions from the viewing experience. User tests are being planned and will be reported on separately. Though developed for one series, *Justified*, the functionalities are presented abstractly so that they can be applied to the genre of television dramas. It will probably be necessary to create authoring templates to make such aids widely useful, including some that could be used by fans to make their own excerpted playlists based on a shared archive or common indexing convention for accessing series video at multiple levels of granularity.

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