Project GeoTV – A Three-Screen Service

Navigate on Smartphone, Browse on PC, Watch on HDTV

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Abstract— GeoTV is a project that explores seamless integration of mobile phones, HDTV sets, and computers in the living room to enrich the user experience of existing services. The three-screen service allows a user to navigate a world map on a smartphone to track geo-located media RSS content that matches her personal interests. The user can show a matching video clip on her phone or direct a nearby HDTV set to play the video. In addition, the user can bring up a world map on a nearby computer screen to navigate areas of interest related to the video clip. GeoTV allows all three screens to be used for what they are best for: HDTV for high resolution video, computer screen for browsing a world map, and a smartphone for personalized control at hand to select media of interest.

Keywords – Geospatial Tagging, Smartphone, HDTV, RSS

I. INTRODUCTION

As mobile devices like smart phones gain more powerful navigation and multimedia features, it is tempting to do many of our everyday tasks on a smartphone. Even though a typical smartphone may have a reasonable 3.5” video display, it does not offer the kind of video entertainment provided by a 45” HDTV set. On the other hand, the remote control that comes with a typical HDTV set is very limited in functionality and is cumbersome to use. In other words, a smartphone needs a large HDTV display, while the latter needs a better remote control and better Internet navigation capabilities. As more and more smartphone users carry their phones with them wherever they go, including the time when they watch TV, it is natural to consider using a smartphone as an alternative remote control for the HDTV set. In addition, as the price of LCD screens continues to drop, a smartphone may control more screens on a video wall in the family or living room - and perhaps become the master controller for all things digital in the house.

II. PROJECT GEOTV

A. Overview

Project GeoTV is a three-screen service that explores the feasibility of this vision by using a smartphone to navigate geo-located RSS content that matches a person’s interests and by directing a nearby HDTV set to show corresponding video clips in high definition. The phone is also used to simultaneously direct a full-screen Web browser on a nearby LCD screen to show areas of interest on a World Map. Figure 1 shows a simplified picture of the Project GeoTV architecture.

Project GeoTV is built on top of two technologies from AT&T Labs: MediaAlert[1], a broadcast video monitoring and alerting system, and GeoTracker[2], a system for geospatial and temporal RSS navigation. MediaAlert allows a user to specify keywords of interest, scans broadcast channels designated by the user, and delivers alerts and Media RSS feeds on media clips through different communication channels. GeoTracker analyzes any Media RSS feed to detect locations and chart them on a world map using the Google Map API. An Apple TV plug-in was also employed by GeoTV to allow an iPhone user to control Apple TV (play, stop, pause, fast forward, rewind) through HTTP calls.

B. Demo Scenario

The following gives a step-by-step description of the demo scenario:

- A MediaAlert user registers his keywords, sources of broadcast channels (ABC, NBC, CNN, etc.), and specific programs of interest (Nightly News, Tonight Show with Jay Leno, etc.).
- At specific times of the day (10am, 4pm, 10pm, etc.), MediaAlert sends out email alerts to the user with pointers to the clips of interest. For example, a user interested in any story about “Michael Phelps” might get alerted on several clips about him during the 2008
Olympics games. The user can click on the thumbnail image to start streaming the video to his computer or smart phone.

- In addition, MediaAlert (and the underlying Miracle Engine) generates a corresponding Media RSS feed of all these media clips, which are available in both MPEG-4, optimized for iPhone, and higher bit rate MPEG-2 at HD resolution.

- A GeoTracker user interface specifically designed for iPhone allows a user to select one of the relevant feeds and maps all locations specified in the RSS feed to pins on a world map (see Figure 2.).

![Figure 2. GeoTracker on iPhone](image2)

- The user can then pick one of the locations (see Figure 3.). The selection would initiate an HTTP call to a Front Row [4] plug-in on the Apple TV to start playing the video corresponding to that location on an HDTV set. Another simultaneous HTTP call invokes a whole-screen Web browser (using SAFT[5], a Safari plugin) to show the area of interest on a world map (see Figure 4.).

![Figure 3. Picking a location on the map](image3)

![Figure 4. Showing selected video on the HDTV set and an area of interest on a World Map on a nearby LCD screen simultaneously](image4)

- The user can zoom in and out of that area on the LCD screen (and the iPhone) by controlling the zoom (+, -) buttons on the iPhone screen.

- The use can also elect to watch the video locally on the iPhone (see Figure 5.).

![Figure 5. Watching the video of interest on iPhone](image5)

C. Current Status

Currently, associations between iPhone, computer, and Apple TV are through direct HTTP calls. We are exploring the possibility of using either DLNA[6] or Bonjour[7] as the device discovery protocol for GeoTV.


