

Demo: An Ecosystem for Open Display Networks

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ABSTRACT

While traditional displays networks are typically closed systems, researchers are now beginning to explore the notion of open display networks in which content can be obtained from a wide range of sources. Open display networks have very different properties to closed networks as they need to deal with multiple management domains and conflicting content and scheduling requirements from different stakeholders. A key challenge is to provide an appropriate software infrastructure to support openness at all stages (e.g. content distribution, schedule creation, media playback). In this work we demonstrate a suite of software components that together provide a comprehensive eco-system for open pervasive display networks.

Categories and Subject Descriptors

H.5.m [Information Interfaces and Presentation]: Miscellaneous

Keywords

digital signage, openness, content distribution, personalisation

1. INTRODUCTION

Commercial display deployments are typically tightly-managed systems dominated by advertising and traditional signage content such as corporate messages. These have been shown to be readily-overlooked by their intended viewers [5] as they are perceived as showing low-value information. Recently, researchers have predicted a movement to ‘open’ displays [4] arranged into large-scale networks [6] in which content from multiple sources can be easily integrated.

Displaying content from multiple sources provides open display networks with two important advantages compared to their closed counterparts. Firstly, by allowing viewers to express preferences regarding the content shown they are more likely to be able to show information that is of interest

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and relevance to individual viewers, thus increasing the perceived value of the display network. Secondly, by opening the network up to new forms of content pervasive display systems can benefit from the significant levels of innovation that arise when an open approach is embraced.

Examples of the type of content that could be supported in open display networks can be found in [4] and include hyper-local advertising, emergency response coordination and behaviour change applications.

Together with fellow researchers on the PD-NET project (www.pd-net.org) we have been working for some years towards a vision of open pervasive display networks. In this demonstration we show a collection of software components that together provide the basis for an open ecosystem of pervasive displays.

2. COMPONENTS OF AN OPEN DISPLAY ECOSYSTEM

We propose an architecture composed of three key elements:

- **A multi-platform playback software system (Yarely [1]).** Yarely is a display-based scheduling and media playback software system that is capable of integrating day-to-day signage schedules from multiple sources to result in a single pool of content to be shown at the display. Scheduling at the display allows each node to combine content constraints (e.g. what time an item should be shown at) together with sensor-based events (e.g. the arrival of a specific viewer) to provide dynamic schedule alterations. Playback support for a range of media (e.g. images, videos, web, remote desktop) is provided for multiple operating systems.
- **A web-based application store for content distribution and display management (Mercury [2]).** Similar to application stores seen in the mobile domain, a store for display networks can help to foster innovation and provides a mechanism for content from a wide range of sources to become available at any display. Mercury provides a web user interface for content contribution (by developers), selection and management (by display owners), together with REST-ful APIs that allow integration with a variety of third-party services.
- **Mobile support for viewer appropriation requests (Tacita [3]).** We use the Tacita mobile client and

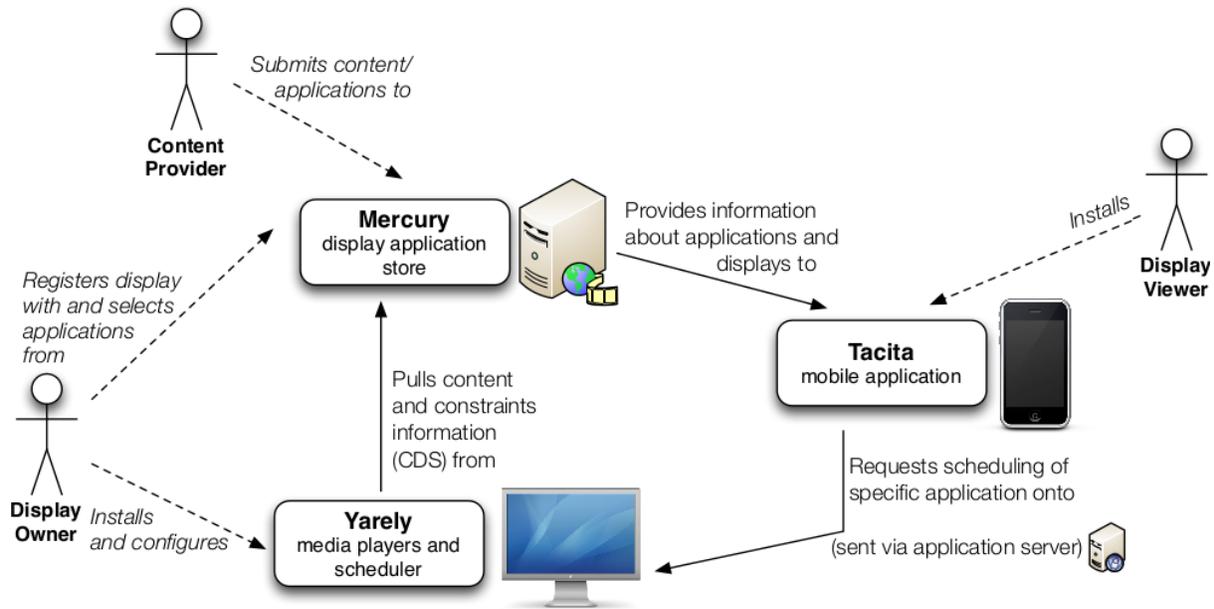


Figure 1: An overview of our open pervasive display ecosystem.

privacy-preserving architecture to allow display owners to open up their displays to content from passing viewers. Tacita allows viewers to browse for local displays and applications and send requests for screen real-estate. Viewer requests are routed through the desired content providers themselves rather than broadcast to displays in order to take advantage of existing trust relationships between viewers and their cloud services.

Together, these elements form part of a unified architecture for supporting appropriation in an open pervasive display network [Figure 1].

3. DEMO DESCRIPTION

In this demonstration we present working prototypes of all of the key components of an open displays eco-system. Delegates will be able to interact with both the application store and the mobile component in order to schedule and personalise content on a range of displays both local and remote. In addition, we will demonstrate a domain-specific version of our application store targeted at the education sector. While each individual components has been presented, this is the first time that the integration of all these components has been demonstrated.

4. ACKNOWLEDGMENTS

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