The PuReWidgets toolkit for interactive public display applications

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1. PuReWidgets toolkit

PuReWidgets is a **widget** toolkit for web-based interactive public display applications that provides:

- Multiple, extensible, controls;
- Multiple interaction mechanisms;
- Automatic graphical interface generation;
- Concurrent interaction;
- Asynchronous events;

2. Multiple, extensible, controls

- Action button - trigger an action in the application, e.g., play a video;
- Option selection - selects among a set of options, e.g., to vote;
- Text entry - sends text to the application, e.g., a comment, tag, search keyword;
- Download - receives a media file from the application, e.g., download poster;
- Upload - uploads a media file to the application, e.g., a photo to be displayed;
- Check-in - says “I’m here”.

3. Multiple interaction mechanisms

PuReWidgets abstracts the details of various interaction mechanisms

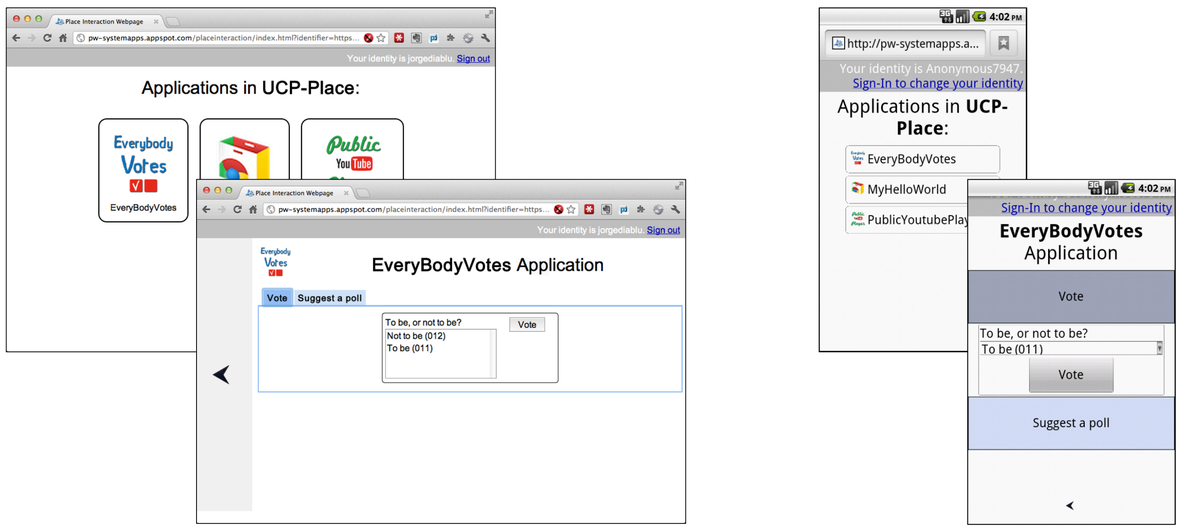
- SMS, Bluetooth naming, OBEX;
- Rich, automatically generated, graphical interfaces;
- QR codes.

4. Automatic graphical interface generation

PuReWidgets provides rich graphical interfaces for desktop and mobile devices, and also QR codes for individual widgets:

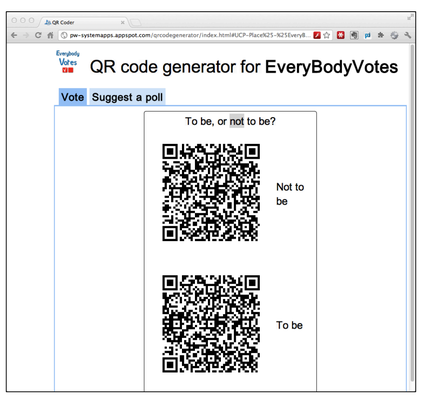
Desktop & Mobile

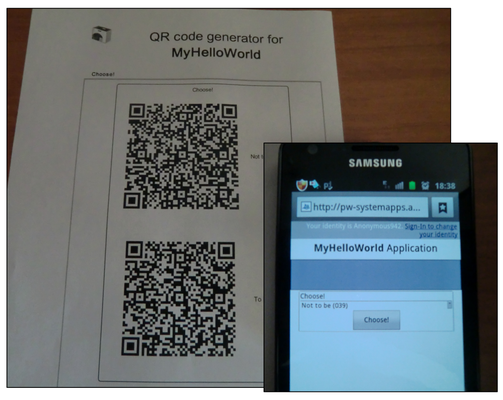
PuReWidgets generates a webpage which lists the applications available in a location, and provides a web interface to each application:



QR codes

PuReWidgets provides display owners the possibility of printing QR codes for individual widgets in use by applications:





5. Concurrent interaction

Allows various users to interact at the same time, while providing applications with identity information that allows them to differentiate users.

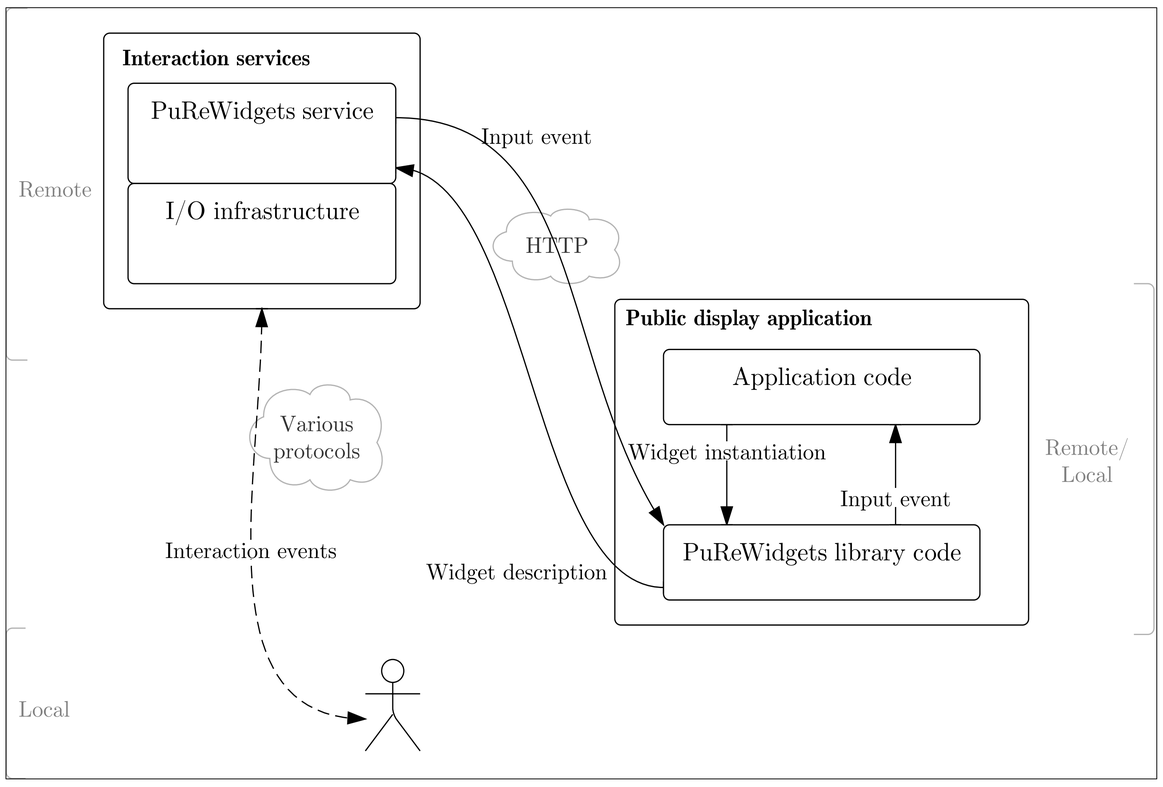
- Every input event carries a user id (if available).

6. Asynchronous events

Allows applications to receive input events that were generated when the application was not listening.

- PuReWidgets provides a persistent input queue for each application;
- Applications can request past input at any time.

7. Architecture



I/O Infrastructure

- Provides low-level data-based interaction;
- Handles data from interaction mechanisms such as SMS, email, Bluetooth naming, etc.;
- Provides a command-based interface to the PuReWidgets service.

PuReWidgets service

- Keeps information about every widget;
- Generates graphical interfaces for desktop, mobile, touch platforms;
- Generates QR codes for every widget;
- Generates unique reference codes for data-based interactions (SMS, BT naming, OBEX, etc.).

PuReWidgets library

- Provides a widget-based interaction abstraction;
- Provides optional graphical representations for widgets and for input feedback on the public display;
- Provides client and server application models;
- Hides communication details with the PuReWidgets service.

8. Implementation

PuReWidgets is implemented using Google’s App Engine platform and Google’s Web Toolkit (GWT) .

- The library is a GWT module that can be included in their projects;
- The service is an App Engine application that exposes a REST API;
- The graphical components take advantage of the standard GWT HTML widgets;
- http://purewidgets.googlecode.com

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