Development of the compatibility search application for web contents transfer between screen devices

SeungJoon Kwon, HyunJin Lee, MoonSoo Lee, KeeSeong Cho, Won Ryu
ETRI(Electronics and Telecommunications Research Institute), Korea
E-mail : kwonsj@etri.re.kr, petrus@etri.re.kr, mslee@etri.re.kr, chokis@etri.re.kr, wlyu@etri.re.kr

1. Introduction

Since the advent of smart screen devices such as smart phones, smart pads, multi-screen application service has been sped-up. Consumers are increasingly using multi-screen devices at the same time. To meet demands, multi-screen application system allows users to enjoy the same web contents or services seamlessly, irrespective of which screen device or medium is being used. When web technologies are used as runtime environment, it becomes possible to transfer the web contents among heterogeneous screen devices. It means that web contents can be transferred from one screen to another screen device over web browser after the use of the compatibility search application. The main feature of the application is to check whether the web contents can be transferred between screen devices. We describe an application that transfers the specific screen device optimized contents to ones better suited to the target device.

2. Compatibility search application

The compatibility search application provides a list of screen devices which is becoming the target devices to transfer web contents. It also manages the web socket connections and resource information such as the model/specification of connected screen devices, screen size, and browser information, etc. As for browser information, it refers to the resources of web browser embedded in the screen devices such as browser type/version, and compatible HTML5 device APIs, etc. All the resource information are stored and managed in the control management server. Since the initialization of the application, sender selects the web contents to be transferred. In order to check whether the designated contents can be transferred to the target device, sender needs to operate the functionalities on the compatibility search for the contents transfer between screen devices. From the compatibility search function, it is provided that any device lists or detailed resource information produced for the web contents transfer are extracted via the control management server.

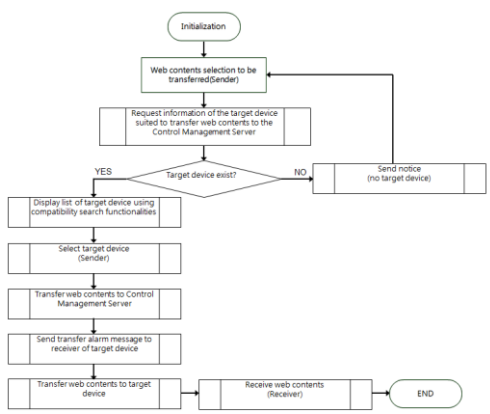

Figure 1. Work flow of the compatibility search application

There are two types of functional definition for the compatibility search application. One is the analysis on the resources of screen devices. It aims to provide detailed information of web browser and compatible HTML5 device API among the connected screen devices. The other is the provision of compatibility search result. As for the device API in use, it gives users a list of web browsers which is suited to the target browser and its corresponding screen device for the web contents transfer among the connected screen devices. It also gives users a list of screen devices accordingly.

The compatibility search application includes the control management server and it manages the following data stored in the database.

[Table 1] Data descriptions stored in DB

Data	Type	Description
browserType	String	Types of web browser(IE, PC Chrome, mobile Chrome, iOS Safari, PC Safari, Firefox, etc.)
browserVersion	Integer	Version of web browser
browserDeviceAPI	String	lists of compatible Device APIs
deviceID	Integer	Specific ID of screen device
deviceName	String	Name of screen device
deviceStatus	Boolean	Status of connection
deviceIconURL	String	Icon URL of screen devices
…	…	…

In the proposed application, the exchanged data during compatibility search for web contents transfer among screen devices are written in set of JSON strings. JSON strings are listed below when the request of compatibility search via the control management server is available.

```
{
   "messageType": "ResultCompatibility",
   "data": {
      "devices": [
         {
            "deviceUniqueId": "12222",
            "name": "blue",
            "deviceIconUrl": "http://www.collabo.com/icon/device/galaxytab",
            "webBrowserName": "Chrome",
            "active": "true",
            "ip": "123.3.33.3",
            "port": "00",
            "deviceType": "CS"  //CS:CollaboScreen, CC:CollaboClient
         },
         {
            "deviceUniqueId": "10000",
            "name": "cyan",
            "deviceIconUrl": "http://www.collabo.com/icon/device/galaxys2",
            "webBrowserName": "Webkit",
            ……..
```

After running the compatibility search application, the web contents(web pages, video files, images) transferred by connected screen devices are combined to provide new multi-screen application service. Based on the properties of screen devices and browser information, this is to make users transfer chosen web contents from one screen to another, increasingly expecting their screens to integrate into a consistent experience across all platforms.

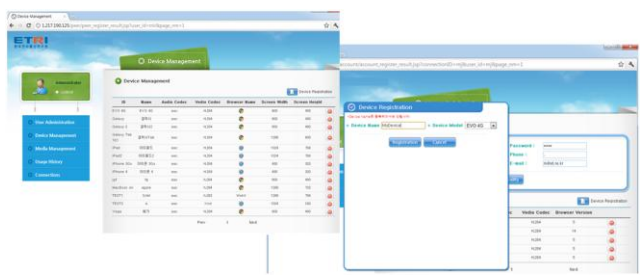

Figure 2. Compatibility search application

3. Conclusion

We implement an application to perform the compatibility search for transferring web contents between connected screen devices. The application will play an important role in enabling true seamless media streaming, web contents sharing between mobile screens and other heterogeneous screen devices.

4. Acknowledgment

This research was funded by the MSIP(Ministry of Science, ICT & Future Planning), Korea in the ICT R&D Program 2014

5. References

[1] MoonSoo Lee, et.al, “Remote Collaboration Screen Control Using Mobile Multi-Touch Interface”, Proc. of the ICTC, Jeju Island, Oct. 2012, pp.272-273.