

Second W3C Web and TV Workshop, Berlin

Rich User Experience through Multiple Screen Collaboration

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Assumptions

■ Web TV?

- General large size display with the **capability of web browsing**
- Content will be more complex, **beyond video**(web pages, web applications etc)
- Located within the sight, but **not within the reach**
- Not a PC(Personal Computer) but a **PC(Public Computer)**

How to control such complex contents at a distance?

How to efficiently represent content to the audience?

Can the second screen settle above problems?

More Assumptions

■ Second Screen?

- Personal hand held device with a display, network module, and computing capability (**possibly smart phones, smart pads etc**)
- Able to connect with the Web TV **to perform as a remote controller** or an **additional information display**

Second Screen Scenario #1

Second Screen as a controller

- When watching the traditional TV content, like a video, the main function requirement would be tuning the channel and the volume up and down.
- However for a convergent content like YouTube, searching and selecting videos wouldn't be easy with the traditional remote control.
- Recently, smart TVs comes with a keyboard and a track pad for the better control, but the display is too far to see what you are typing and have to AIM the mouse from a 10-foot distance



<traditional remote control>



<smart phone remote control>



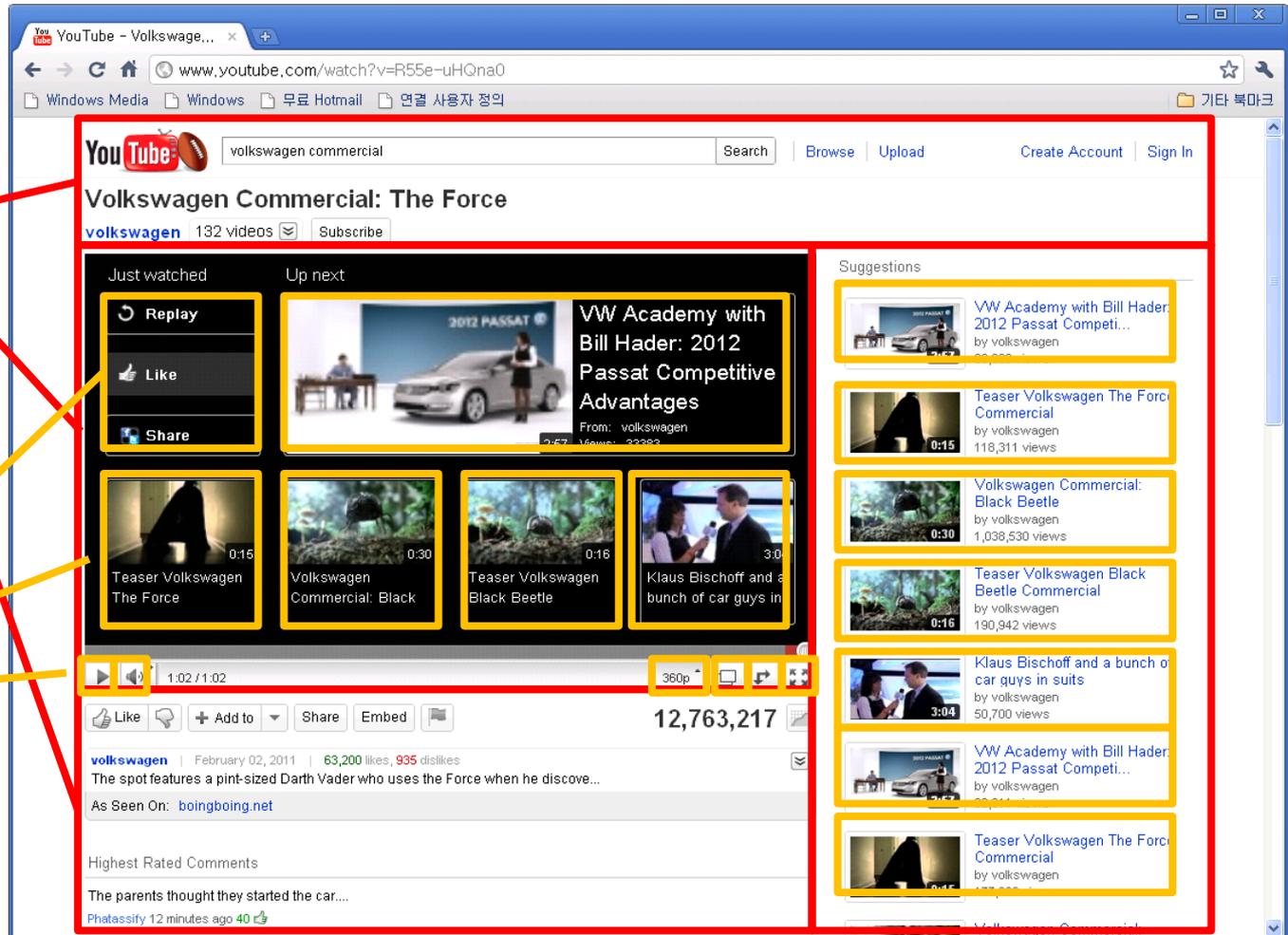
<keyboard & track pad>

Second Screen Scenario #1

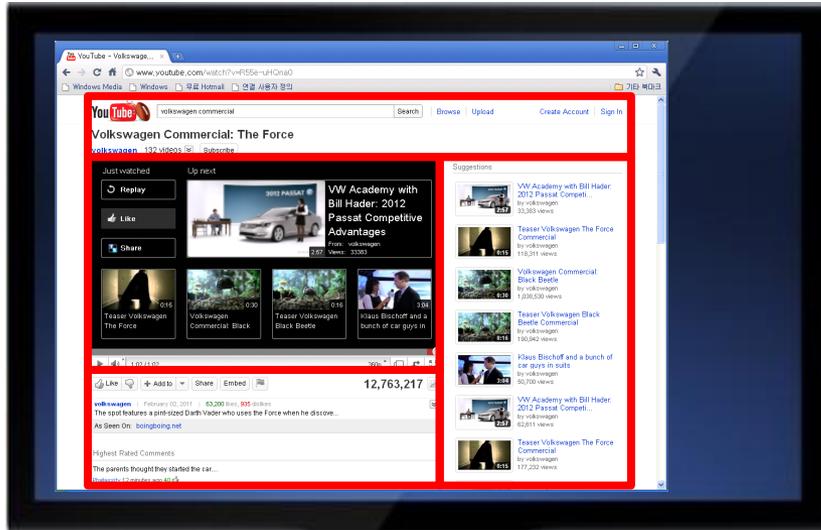
Possible Approach: Web Fragmentation & Migration to the second screen

Web Fragments

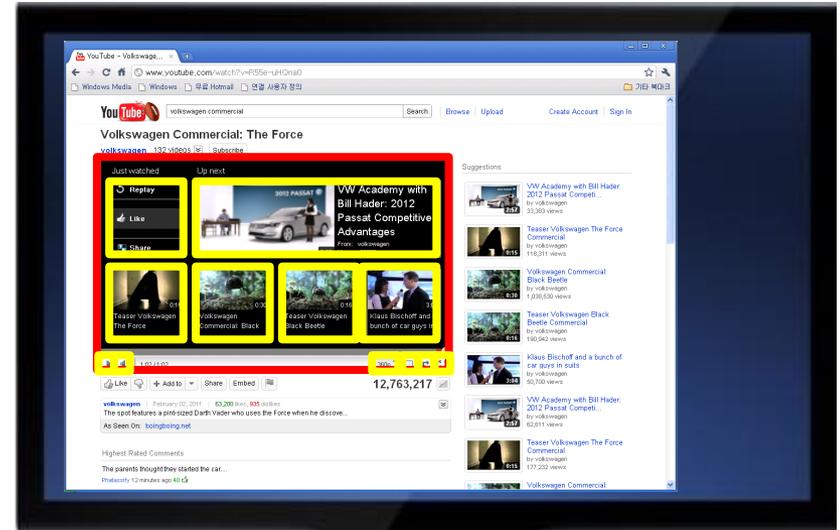
UI Buttons



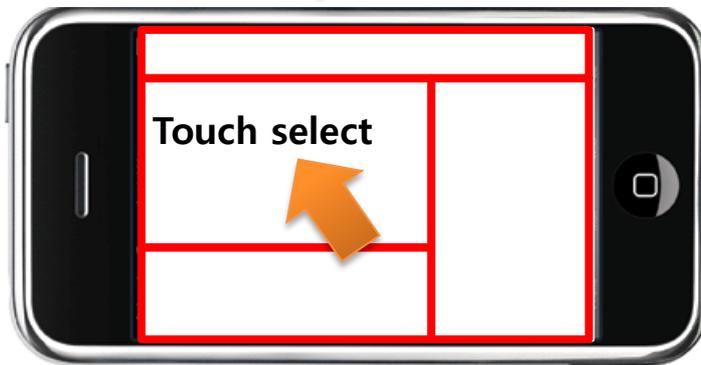
Second Screen Scenario #1



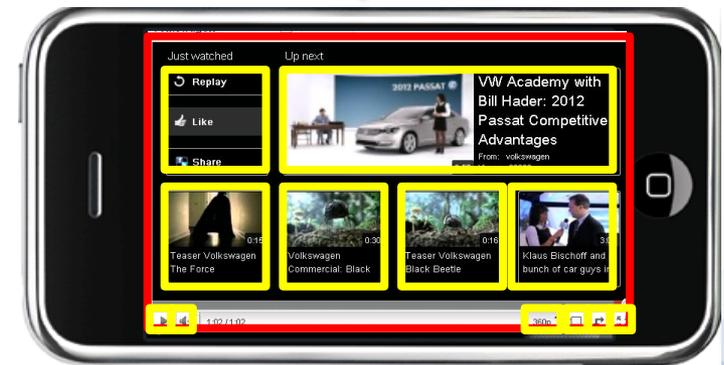
Fragmented page structure



Selected fragment



Fragmentation Mode



Selected fragment rendered

Second Screen Scenario #2

Second Screen as a content separator

- While one is watching a TV program on the Web TV, the other wants to purchase the product on the show.
- He presses the “purchase” button on the Web TV to continue his purchase procedure.
- Such action might both **distract others** & **expose private information to the public**
- He activates “UI migration mode” and the purchase procedure may continue on his “second screen”



Second Screen Scenario #3

Collaborative content sharing through the second screen

- TV as a hub for a family talk and **content sharing**
- Two family gathered around the TV to share information for family trip planning
- A member takes out his smart phone to share the web site introducing the travel sight and **"posts" the webpage on the TV canvas**
- Another member looks up the sight and finds a great photo to share, **sends the photo to the TV**
- Multiple content **objects and web pages are visually shared on the Web TV**



Demo Video



Requirements

■ Device discovery

- An open and widely accepted standard protocols are required (e.g. DLNA/UPnP)

■ Web fragmentation

- The web application or web page needs to be structured by a mark-up/annotation
- Or should undergo a web fragment parser with a fragment detection algorithm
- The browser need to support web fragment rendering engine(or a plug-in)

■ UI migration

- Session management is required for not only stream video migration but also web page/application session

Issues and Discussion

■ Dependency

- Current scenarios are device free, but browser dependent

■ Second screen authorization

- Two or more users might manipulate a single content at the same time using their own second screen

■ Synchronization among screens

- While on screen content changes, the rest of the screen would remain unchanged unless the subject sends a notification
- There is a tradeoff between the frequent refresh of the webpage and system performance

■ Web fragment level content filtering

- It is possible to filter hazardous content (e.g. violence) which the Web TV might play in the public by the fragment markup

■ Standardization needs?

Thank You