# Position Paper for the third W3C Web and TV Workshop

## Multiple Screen Scenario – Additional Use Case and Key Issues

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## Abstract

In the workshop, we would like to show our use case and discuss our new idea related to the Web support in connected TVs, especially focusing on the Multiple screen scenario and the Home networking, from one of the consumer electronics manufacture's perspective. This Position Paper briefly describes our use case and key issues in Web and TV convergence, and summarizes major technical challenges and possible solutions to make correct requirements of the Web and TV for W3C Working Group activity, defining new standards for the Web.

## Use case

In the Multiple screen scenario, we will expect the following use cases illustrated in the figure below. This is also the one of the typical use case with Home networking.
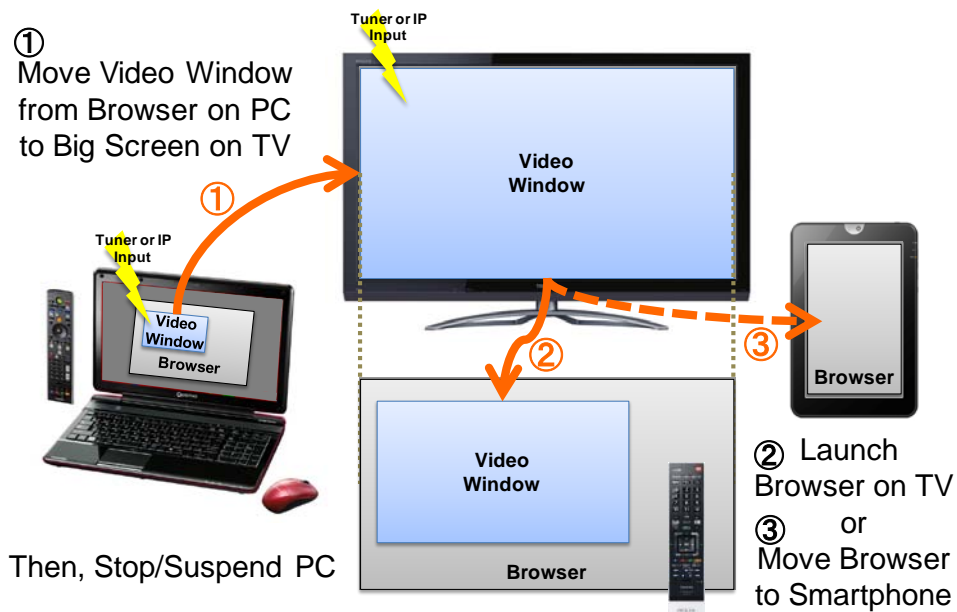
At first, a user watching the TV program or some video stream on the Web browser, or on the embedded web-based browsing function in some application by using PC. Then, the user would like to watch that video on the "Big Screen" on TV for some reason like watching more comfortably or with family. This is the first use case "Moving video window in the PC browser to the external Big Screen on TV connected by Home network". We would like to mention in this use case, the user might turn off or suspend that PC for ecological reason, so we should assume and take care of that. In that case, "Above migrated video window on TV should keep working without PC previously used".

After watching video on TV, the user might like to watch other video (e.g., related video or other video program) or find some additional information related to the video on TV. In this case, there will be at least three way of providing user interface to TV. The first one is use the Web browser on previously used PC, but in this case user forced to move back to the PC, and sometimes wait for turn on or resume that PC. The second one is use the Web browser on TV with it's remote controller, but in this case the video window on TV should be placed in that Web browser since the video window displayed on TV is originally the part of the Web browser, or at least the content on the Web browser, on PC previously used. The last one is use the Web browser on Smartphone with the video window on TV, but in this case the video window on TV must be changed as a part of the Web browser on Smartphone and the content on PC previously used will be moved to the Web browser on Smartphone. There are two use case from the second and last case, "Move the video window on TV or whole contents on the Web browser on PC previously used to the Web browser on TV" and "Move the whole contents on the Web browser on PC previously used to the Web browser on Smartphone, and change the video window on TV should change to the part of the Web browser on Smartphone from PC".

In the above use case, we mentioned the "Migration of video window and Web browser" mainly, but we believe that the actual use case should accept more flexible user's demand. So, we need expect "Simultaneously use at any combinations of the video window and Web browser at any combinations of devices", that will be new use case.

At last use case we will expect is the source of the content. "Contents for TV will be retrieved from Web servers or provided via Broadcasting channels".

We believe the above use case is very common in the current and future TV products with the Home Networking function, but we have not yet discussed in the previous workshops. We should discuss this and clarify key issues and technical challenges. In the subsequent part of this Position Paper, we will show some examples of those, but we will show more in detail if we can make our presentation in the workshop.

## *Issues*

There are some key issues in Web and TV convergence with the above use case:

To move the video window in the Web browser to other device on the network,
- Combinations of the video window and the Web browser must be flexible.
- Combinations of the video window and the Web browser must be changed at any time at any devices.
- There is no way to find and no simple access method to TV function on local/other devices.

To reduce additional effort and cost for contents providers,
- Same contents can be shown and accessed TV functions on any local/other devices without multiple authoring and/or implementations.
- Contents for TV will be retrieved from Web servers or provided via Broadcasting channels.
- TV function is not for general purpose and too much to implement in the general browser (e.g., ie, safari, chrome, firefox, opera).

## *Challenges*

We assume major challenges and possible solutions as follows:

- How to provide easy way to find and to access to TV functions on local/remote devices from Web browsers and Contents?
  - How to define the interface/API between Web browser and TV functions?
  - How to define the interface/API between content and Web browser?
- How to provide user to use any "general" Web browsers on any kind of devices?
  - How to archive easy and simple way of access from contents to TV?

We propose possible solution as follows:

- To discuss Web & TV Architecture, including Web browsers, TV functions and contents implementation during workshop and try to make our consensus before starting technical discussion in detail.
- To make correct requirements of the Web and TV for W3C Working Group activity, we should collect actual, practical and productive use case from real committed people on Web and TV, like contents creators and providers for TV, TV broadcasters, TV browser vendors, TV manufactures & vendors and other Web & TV communities.

## Conclusion

We would like to discuss above mentioned issues and challenges at the workshop. Currently, TV functions are not "General Purpose Use" but "Specific Purpose Use". Although TV functions are "Specific", implementing those functions without deep consideration leads to diversion of the Web, and then we will break the "One Web". Therefore, we should think about overall architecture for Web and TV convergence. We believe appropriate separation of TV "Specific" feature from the Web browser, enables to use "General Browser" and keep "One Web". We are now discussing this issue internally, so we can show several possible solutions for W3C discussion.

Since we TOSHIBA have a lot of experience and lessons learned from developing and implementing Web-based functionalities into our products including both TVs and TV-like PCs in the worldwide market, we can mention the implementability, deploymentability and operational viewpoint from our knowledge. We can also show the information for those during the workshop to have a good discussion and conclusion. We are really looking forward to attending the workshop in Hollywood.