Preserving Frame Rate on Television Web Browsing

Additional Issues from TV perspective
(to be bashed)

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Brief Intro of the Two Groups

- W3C Web and TV Interest Group
- W3C Web and Broadcasting Business Group

In a Nuts Shell

- Performance is important for web browsers on TV set as well.

- However, in some cases, real-timeness is more important because TV experience is totally temporal and timing experience.

- Nonetheless, I don't think we should have RT-browser such as RT-Linux for linux world. Because it may slow down the evolution of web platform.

- IMHO, we should have adequate performance APIs that enable developers to measure real-timeness of their apps on various environments easily, and let them decide what they do to maximize UX.

- I would like to see how this WG and the IG/BG can work collaboratively on this topic.

Motivation

- Tobie's Perf Feedback on Coremob ML and the topics here so far are effective in improving UX of web apps on TV devices as well. So I would like to focus on other potential perf issues of web apps on TV devices here.

- SmartTVs have TV-media-stack chips to deal with live video streams and CPU/GPUs to run web apps on web browsers.

  - A difference between SmartTVs and SmartPhones is that all SmartTVs are capable to display live video streams without a drop of frame and within a few seconds of constant delay via broadcasting, IPv6 multicast, DASH (& Media Source Extensions?) or whatever. This is a core value proposition of "Television".

  - On the other hand, the performance of web apps vary in wide spectrum from high-end TVs such as Cell REGZA ($12,000) to low-end TVs such as ZOX ($60) while all of these TVs satisfy the previous value proposition.

- This perf gap between "Television" and web apps within a device is a key factor because a signifying type of SmartTV apps is apps that run synchronously with live video streams.

Perf and Interop Lab in Tomo-digi

Issues

- Issue-1: Preserving frame rate of web apps on TV set
  - Use case: Dynamic Interactive Ad Replacement
    - DASH works pretty well for preserving frame rate while changing quality of images when bandwidths are getting narrow. DASH will work well for achieving dynamic non-interactive ad replacement.
    - I would like to have similar mechanism to select UI of TV web apps to preserve frame rate or UX; with help of performance information.
- Issue-2: Gathering perf information of Issue-1 automatically
    - Developers need to know performance information, including frame rate, of web browser to design and tune-up their apps for maximizing UX: ex. preserving frame rate of web apps for achieving synchronization with live video content.

Potential Discussion Spaces

- Web and Broadcasting BG
  → Gather and polish business use cases
- Web and TV IG
  → Clarify requirements and analyze gaps
- Web Performance WG
  → Develop specifications