TOSHIBA
Leading Innovation >>>

Responsive Multi Screen Web
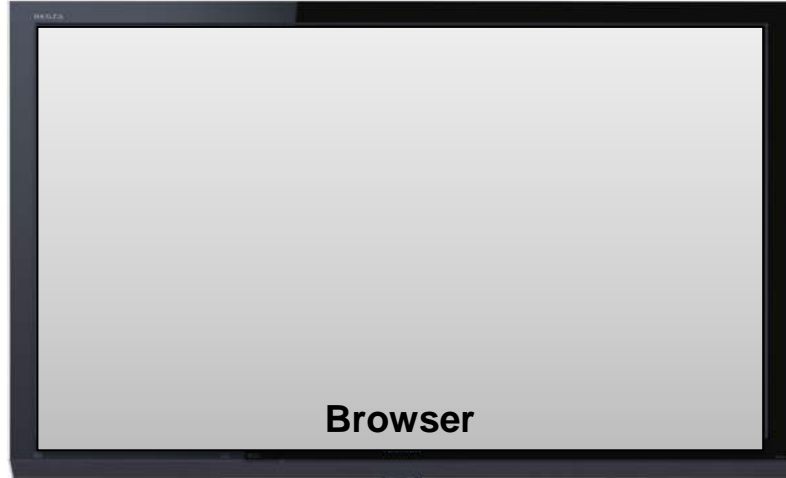
Hiroyuki Aizu

Corporate Research & Development Center
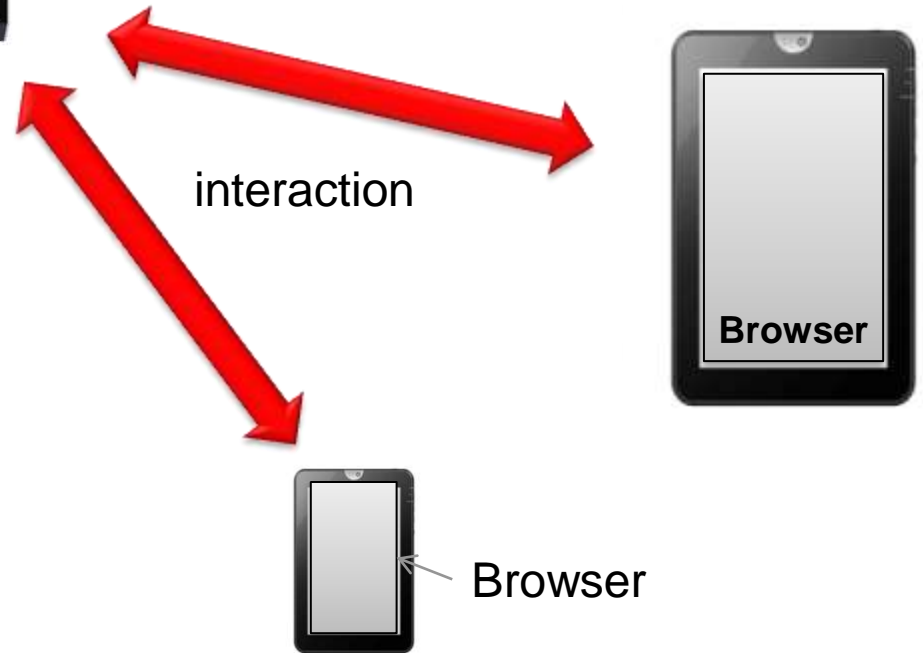TOSHIBA Corp.

TOSHIBA
eco style

Toshiba Group contributes to
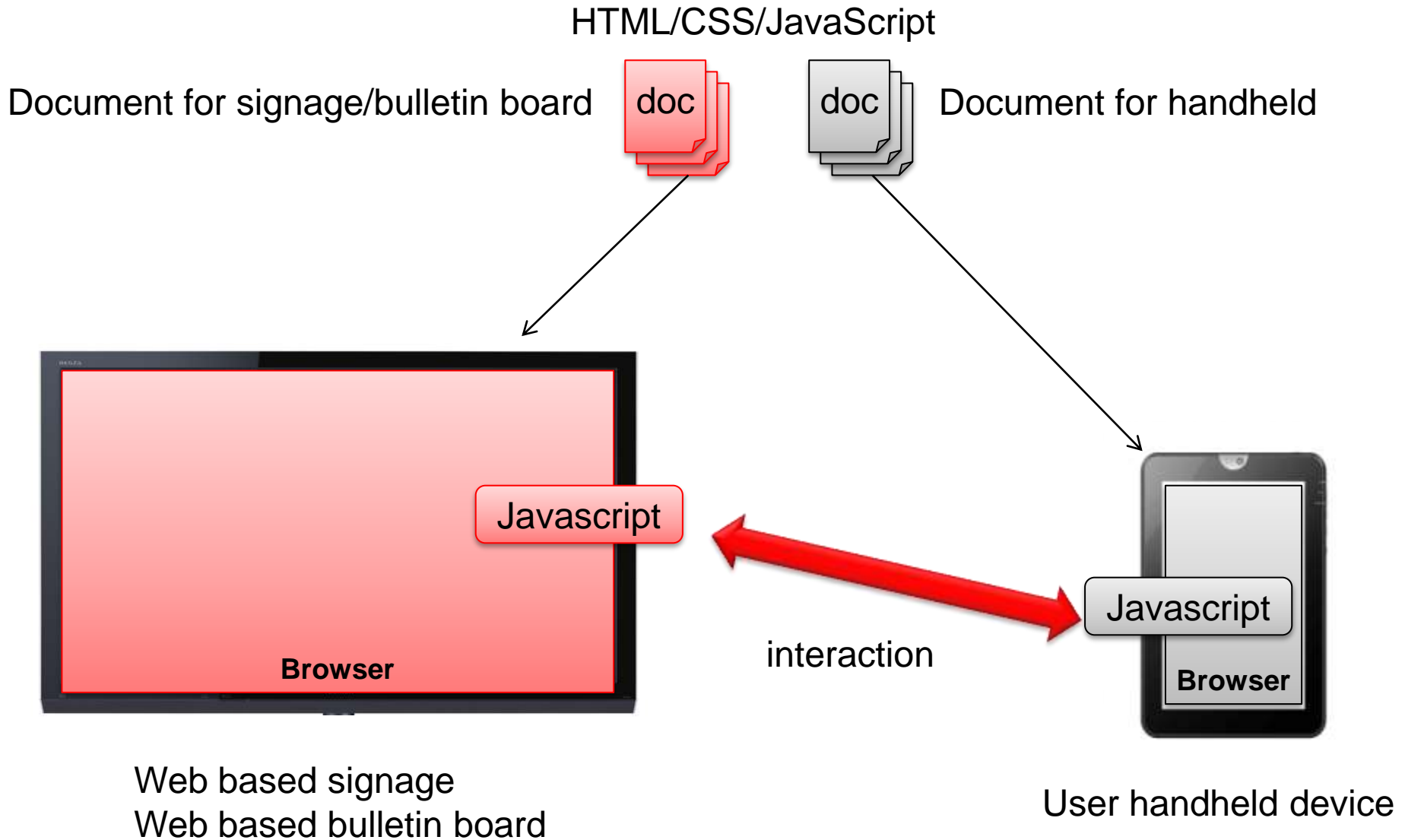the sustainable future of planet Earth.

Multi Screen signage scenario

Browser
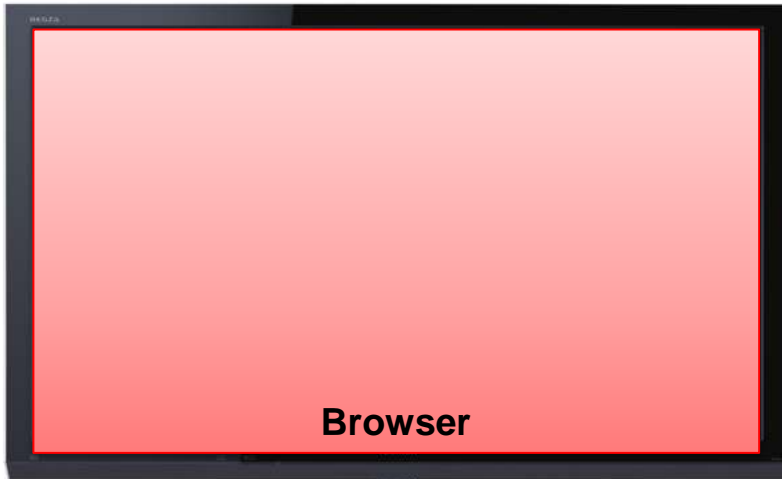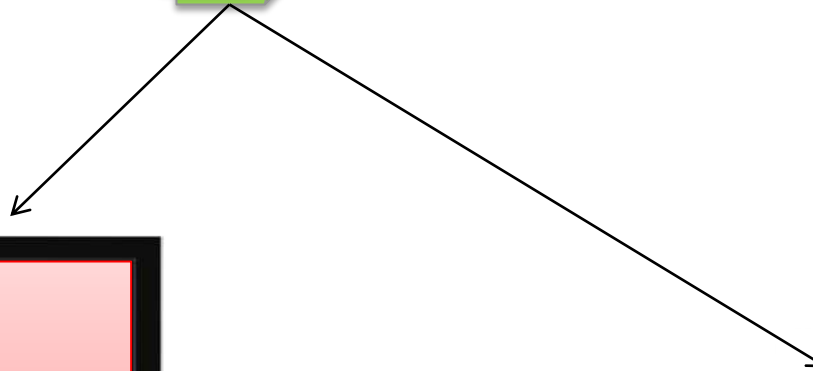
Web based signage
Web based bulletin board

interaction

Browser

Browser

User handheld devices

Based on current web specs

HTML/CSS/JavaScript

Document for signage/bulletin board   **doc**   **doc**   Document for handheld

Javascript

Browser

interaction

Javascript

Browser

Web based signage
Web based bulletin board

User handheld device

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Responsive multi screen web application

HTML/CSS/JavaScript

doc

Browser

interaction

Browser

Web based signage
Web based bulletin board

User handheld

Single Screen Web (Large Screen)

video

doc

Document
(HTML/CSS/JavaScript)
+ Video, Image

text
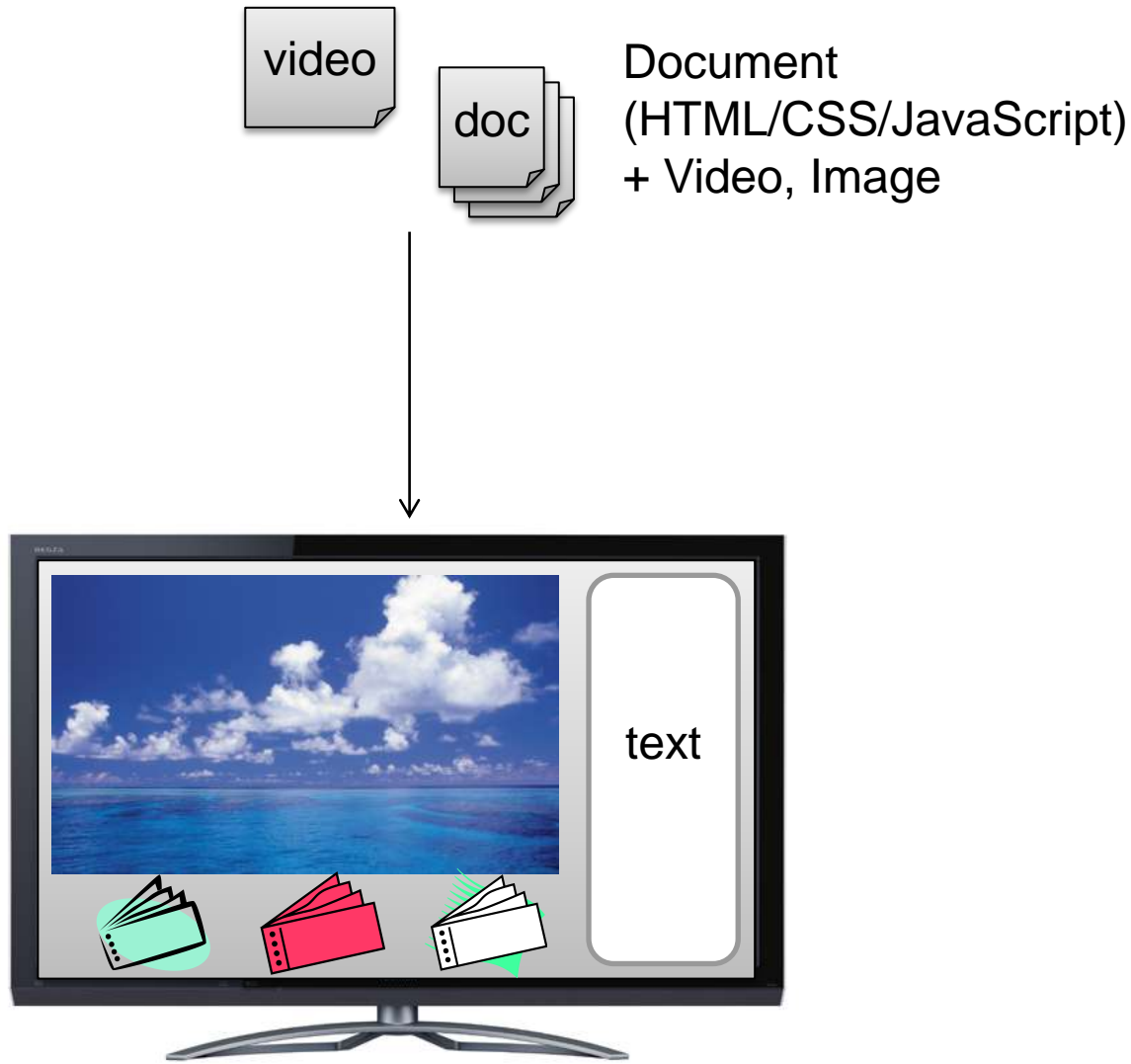
Single Screen Web (Small Screen)

video

doc

Document
(HTML/CSS/JavaScript)
+ Video, Image

text
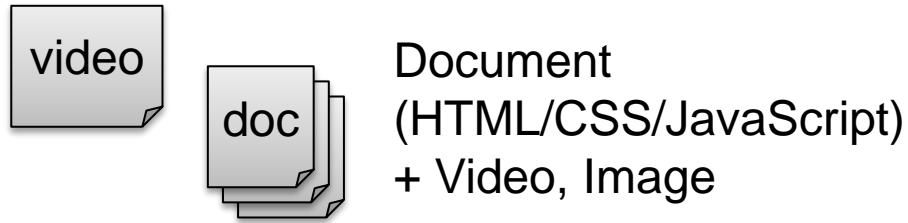
The layout of content will be adapt to the screen characteristic.

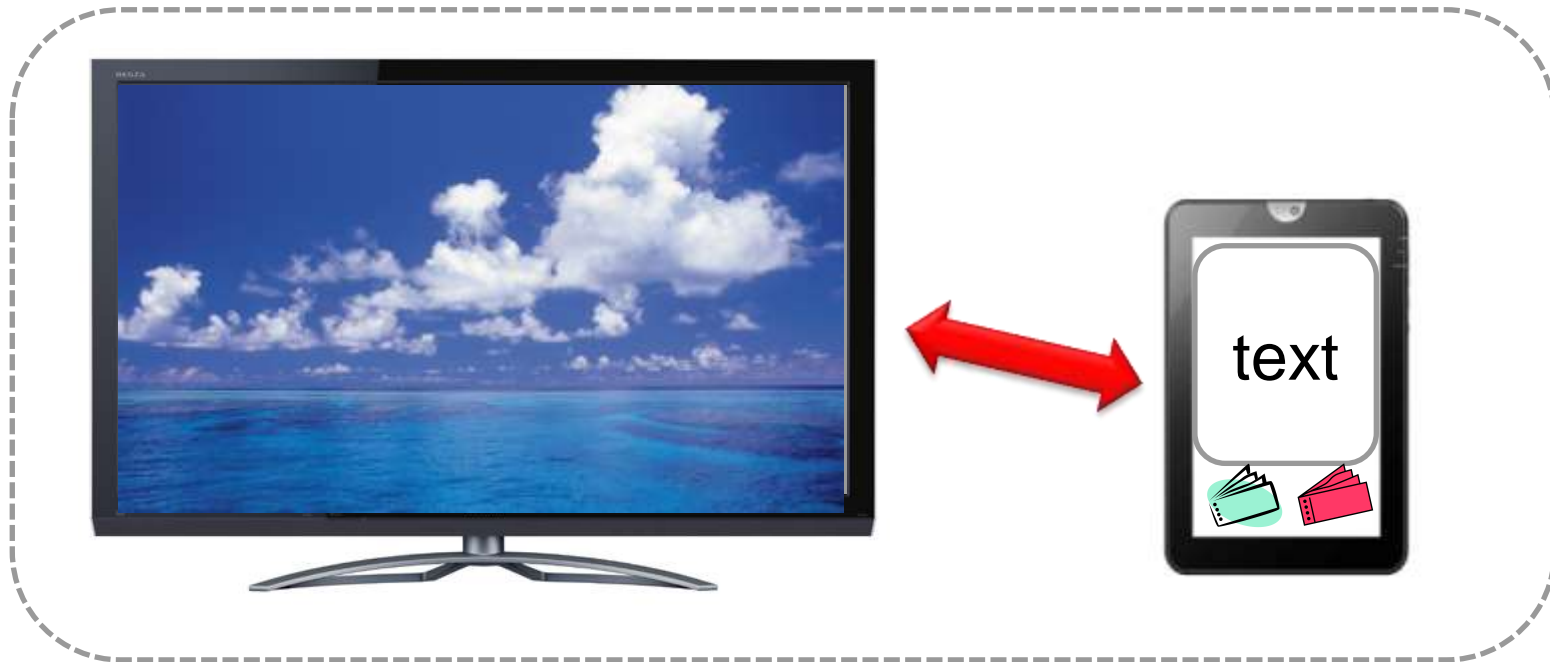Ex. CSS selectors, media query etc.

Multi Screen

video

doc

Document
(HTML/CSS/JavaScript)
+ Video, Image

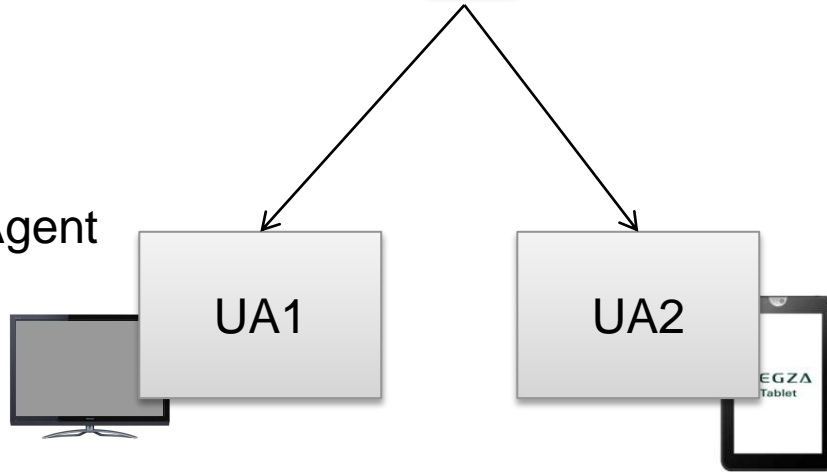view multiple screen(multiple user-agent) as a single user-agent.

text

Concept

Document
(HTML/CSS/JavaScript)
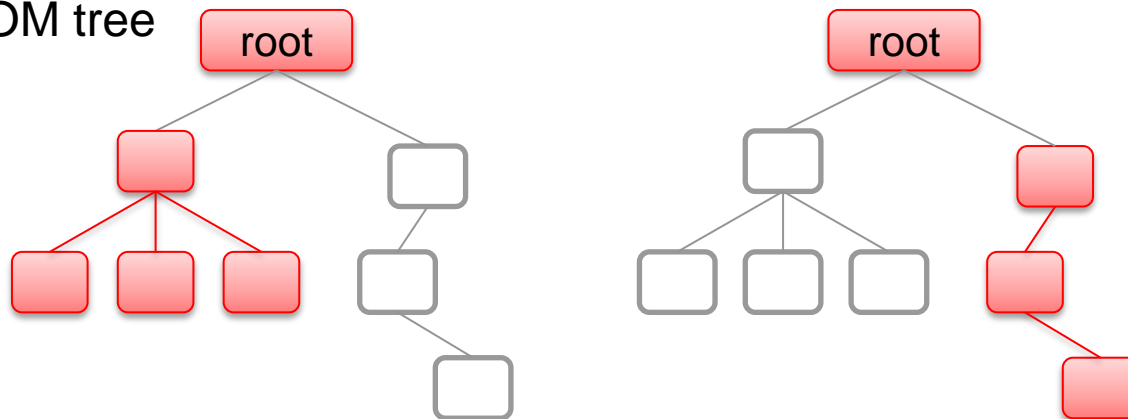
doc

User-Agent

UA1   UA2

EGZA
Tablet

DOM tree

root   root

activate   deactivate   deactivate   activate

- **The logical web content is single DOM tree.**

- **Multiple UA collaborate for multi DOM tree as single DOM tree.**

Requirement

Document
(HTML/CSS/JavaScript)

doc

User-Agent

UA1   UA2

DOM tree

root   root

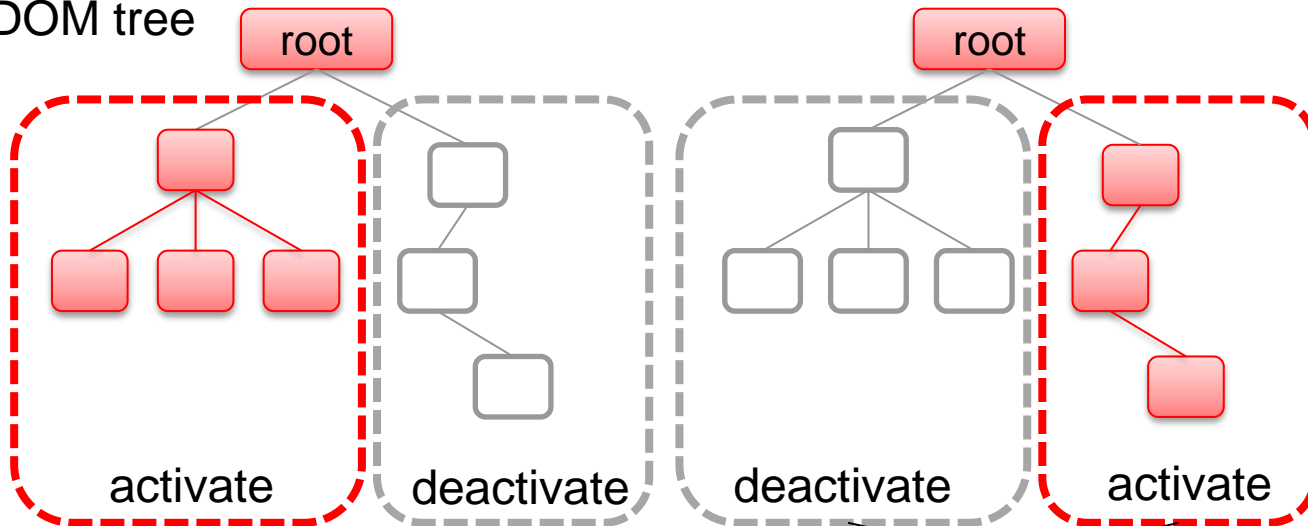activate   deactivate   deactivate   activate

Evaluate and selection

- **UA evaluates each attribute of element to activate/deactivate based on it's roles.**
  - Extension for CSS selector and/or media query

Requirement (cont.)

Document
(HTML/CSS/JavaScript)

doc

User-Agent

UA1   UA2

root ←→ root

Event sharing

operation →

Reflect the element operation to the paired element on companion user-agent

- **Event sharing**
- **Reflection**

Gap analysis for W3C standards today

- **Concept level**
  - Multi User-Agent
  - Multi DOM tree

- **What's need to extend specs?**
  - UA evaluates each attribute of element to activate/deactivate based on it's roles.
    - Extension for CSS selector and/or media query
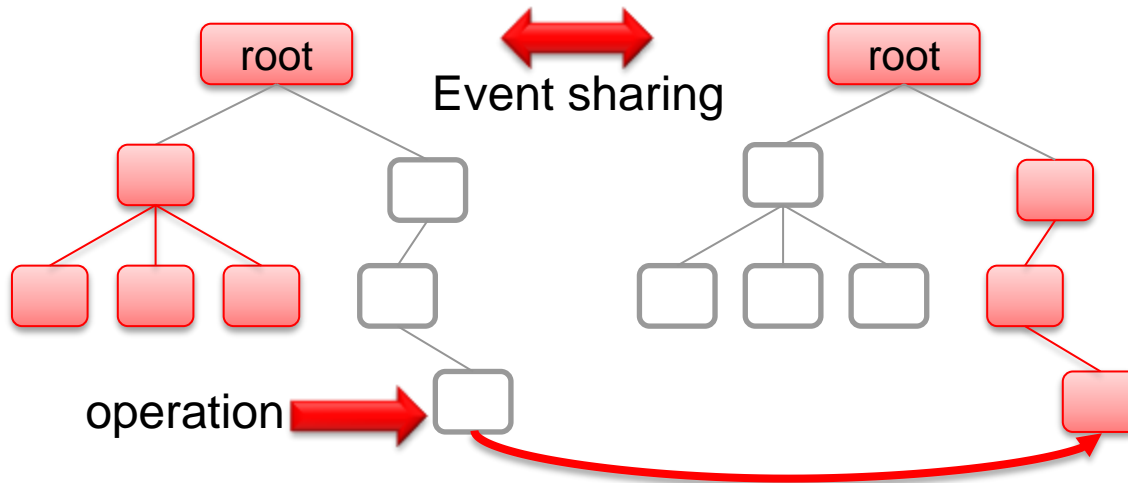   - HTML element attribute to present it's role ?
  - Event sharing between User-Agents
  - Reflect the element operation to the paired element on companion user-agent
  - User-Agent Pairing, join/leave
    - discovery