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Expanding the horizontal of Web

- Mash up Web and home networked devices -

The Third W3C Web and TV Workshop
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Hollywood, California, USA

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At the first Workshop in Tokyo, 2010

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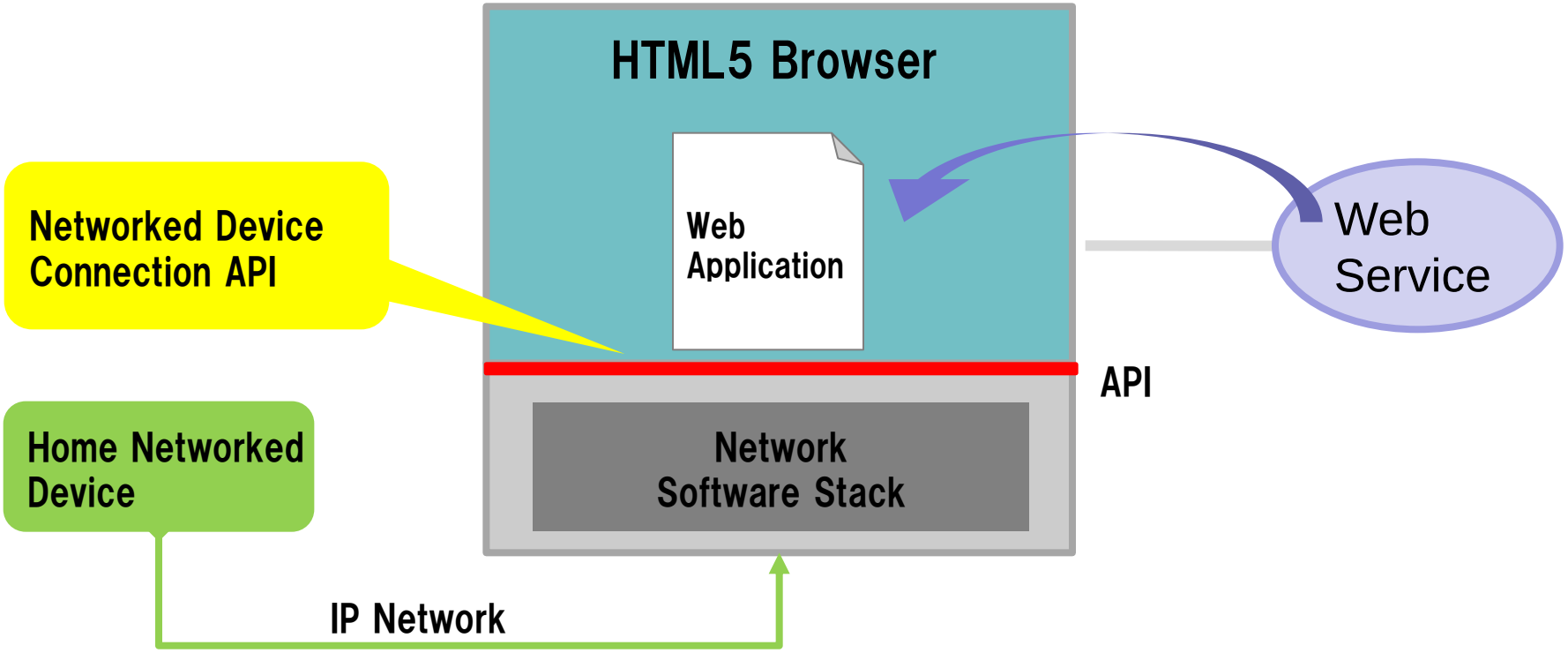
- Sony suggested to standardize the API which enables Web applications to interact with home networked devices (Networked Device Connection API)



Expanding the horizontal of Web

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Sony thinks that the “Networked Device Connection API” is one of the approaches to expand the horizontal of Web

A) Let various types of device connect to web services
   - E.g. Multi-Modal Interaction Working Group of W3C, M2M

B) Let various types of device support the web browser
   - E.g. Device APIs Working Group of W3C

C) Let web applications communicate device locally
   - This approach is missing in W3C

- What is the approach C)
- How the “Network Device Connection API” should be;
  - high level v.s. low level API
  - security and privacy concerns

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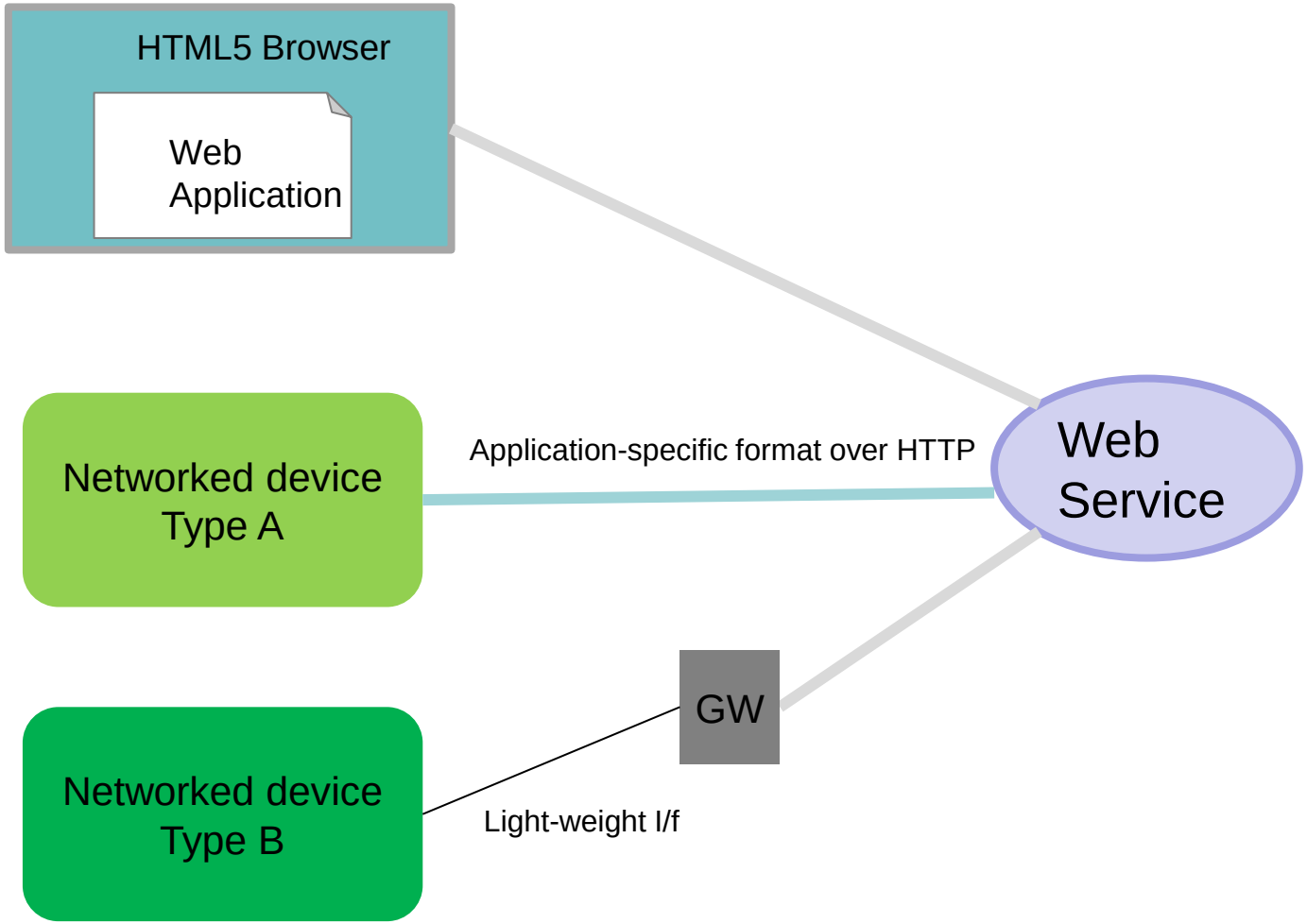
(A) Let various types of device connect to web services



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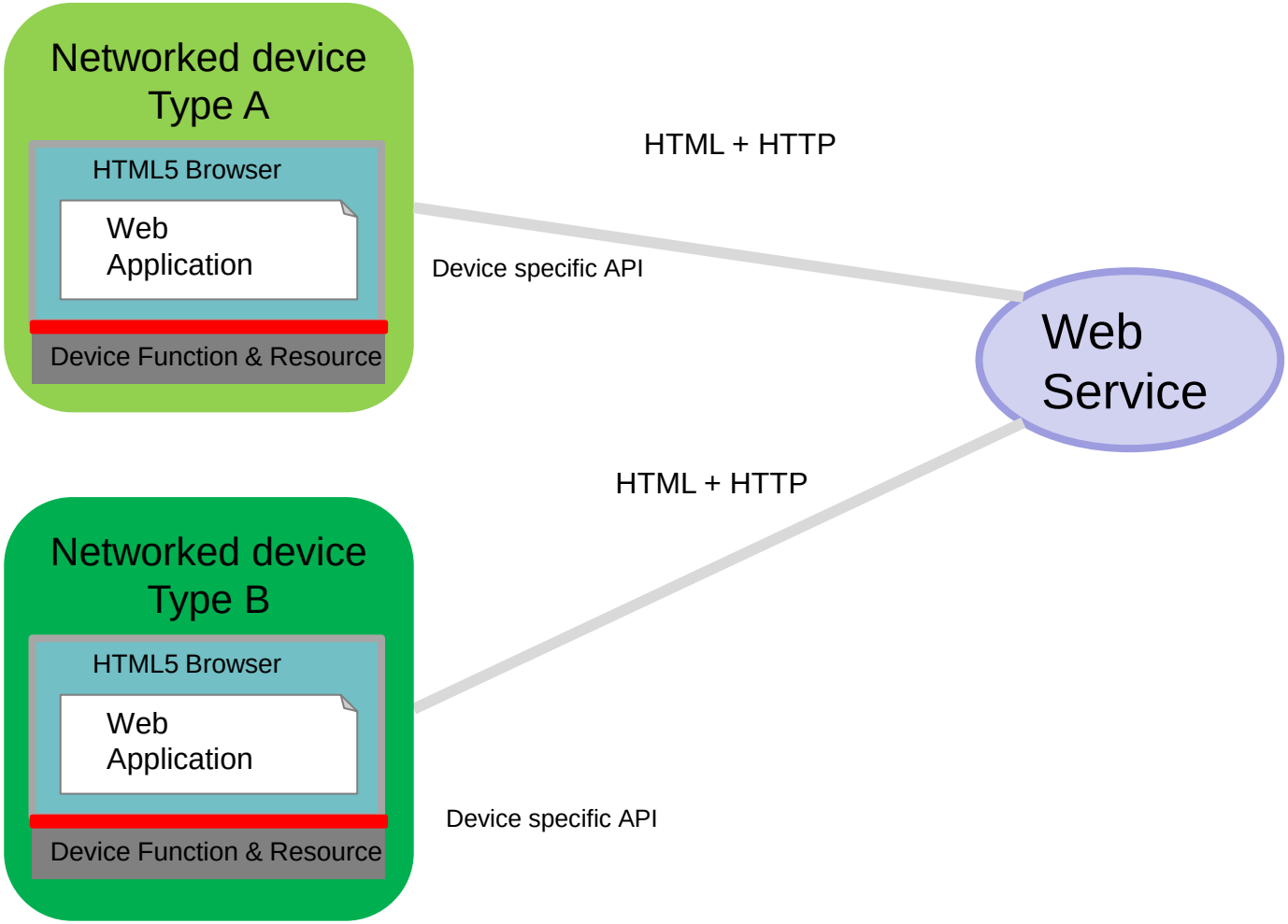
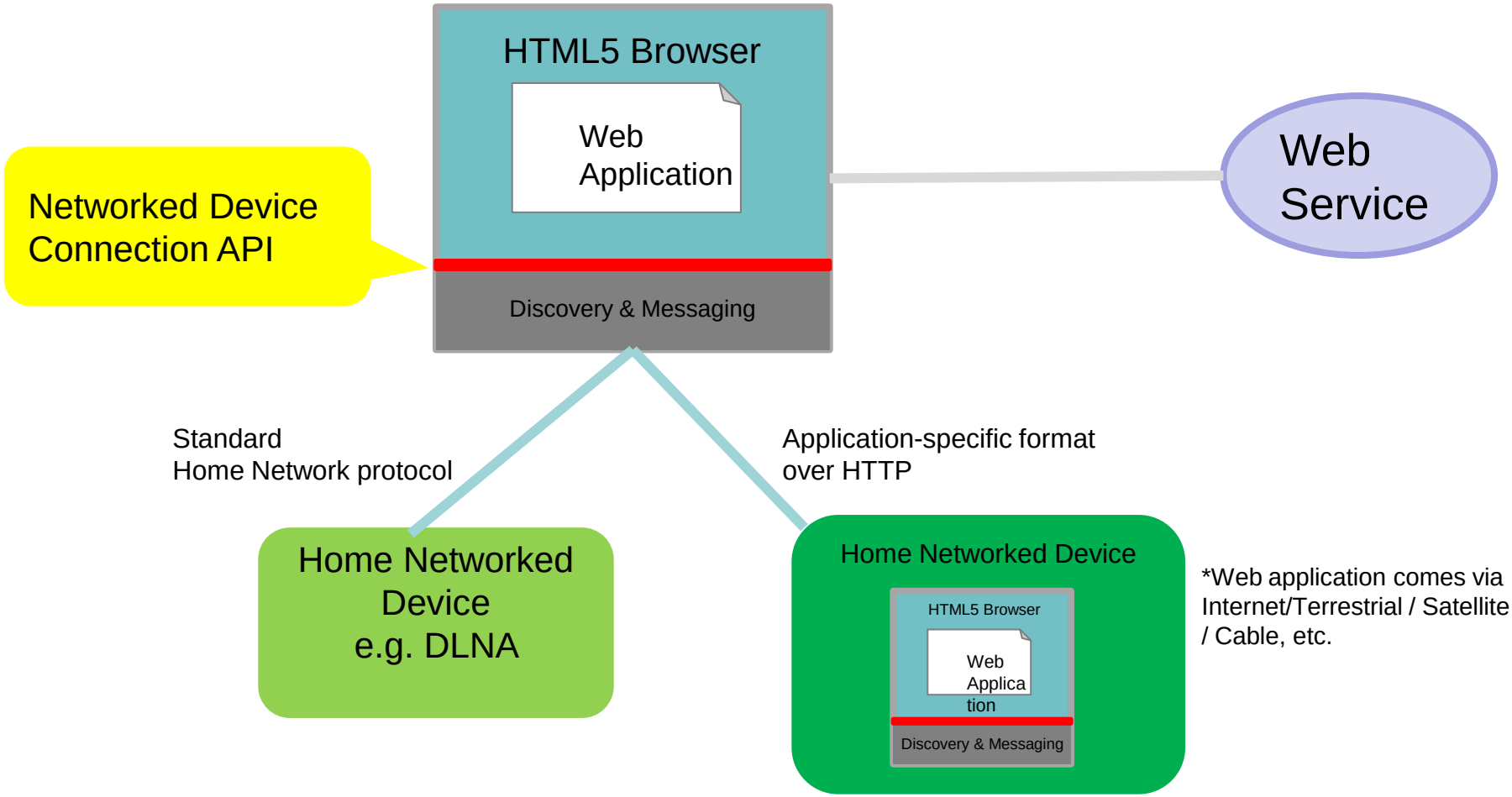
(B) Let various types of device support the web browser



(C) Let web applications communicate device locally



High Level API v.s. Low Level API

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- Two idea on the API
  - High Level API
    - Enable only to discover and communicate a specific service, e.g. DLNA media renderer.
  - Low level API
    - Enable to discover and communicate an arbitrary service which is based on a common protocol, e.g. HTTP

- Sony suggests the low level API
  - It has a potential to realize a new type of service/application which mashes up Web and (home) network devices
    - 2nd screen scenario, home automation/energy, healthcare, etc.
  - It can also enable the discovery and control of pervasive DLNA devices if the underlying protocols are compatible with the UPnP standard.

Security & Privcy

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Risk	Risk Level	Risk per type of APIs		Effectiveness of Solutions (To Reduce Risk)				
		High Level API	Low Level API	IP Address Filtering by UA	Waning of Device Discovery by UA	Waning of Device Access by UA	Web App. Auth. by UA	Defense by device
1. Disclose information about discovered devices	Low	Yes	Yes	N.A.	Yes	N.A.	Yes	N.A.
2. Unexpected control of discovered service	Mid (*depending on service)	Yes	Yes	N.A.	Yes (implicitly warned)	Yes	Yes	N.A.
3. Malicious Attack on discovered device	High	No	Yes	N.A.	N.A.	N.A.	Yes	Yes
4. Malicious Attack on any devices on home network	High	No	Yes	Yes	N.A.	N.A.	Yes	Yes

NA: Not Applicable

* Please see demo

DEMO

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Web Service

Online
Video Shop

video

Home

Web App

Home Network Device

TV

Please see how the warnings of security and privacy look like

Waning of Device Discovery by UA	Waning of Device Access by UA

Discovery & Control

Media Renderer

Tablet device
Browser (proto-type)

Conclusion

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- The API should be generic, i.e. application agnostic, to enable new types of application/service
  - Protocols should be compatible with the industrial standards, UPnP and DLNA.
  - Protocols should be friendly to web browsers.
- Security and privacy are crucial for consumers, however it should not be a “Show-stopper” to move the discussion forward

- Sony suggests to create a new Working Group of W3C to discuss a generic API for Discovery and Message Exchange on local IP network

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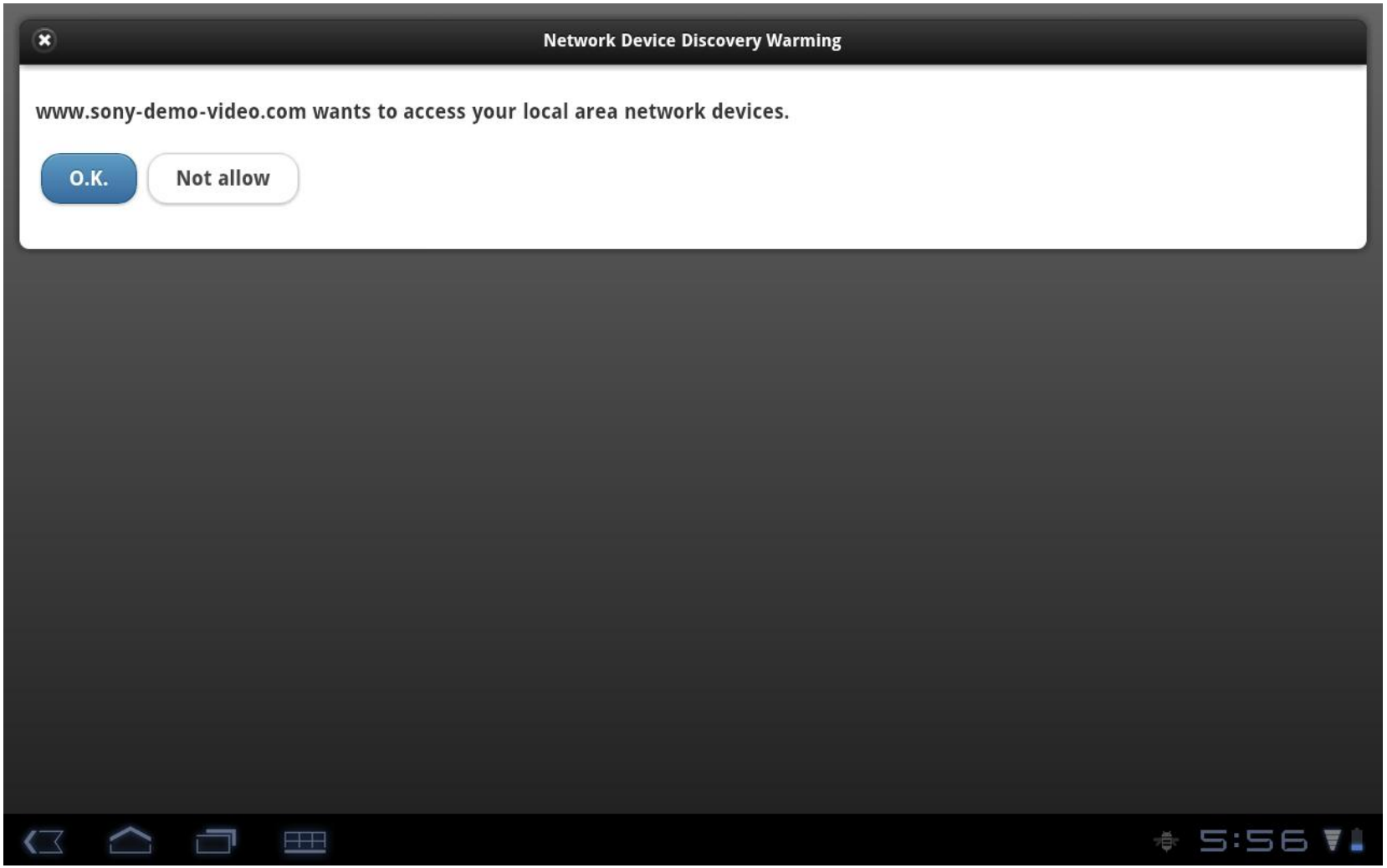
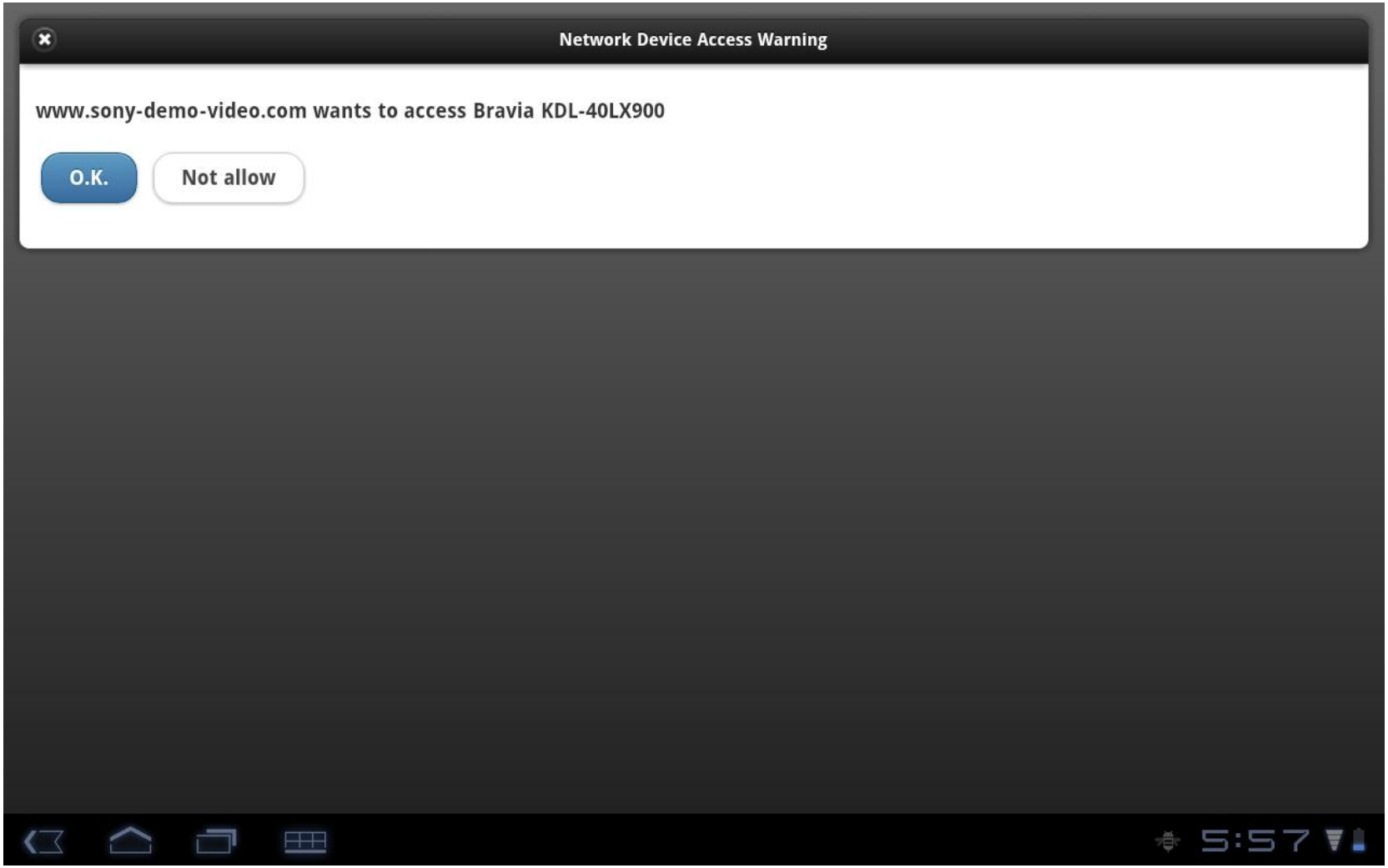
Appendix

Example of Discovery Warning by UA



Example of Access Warning by UA



Example of UA Setting

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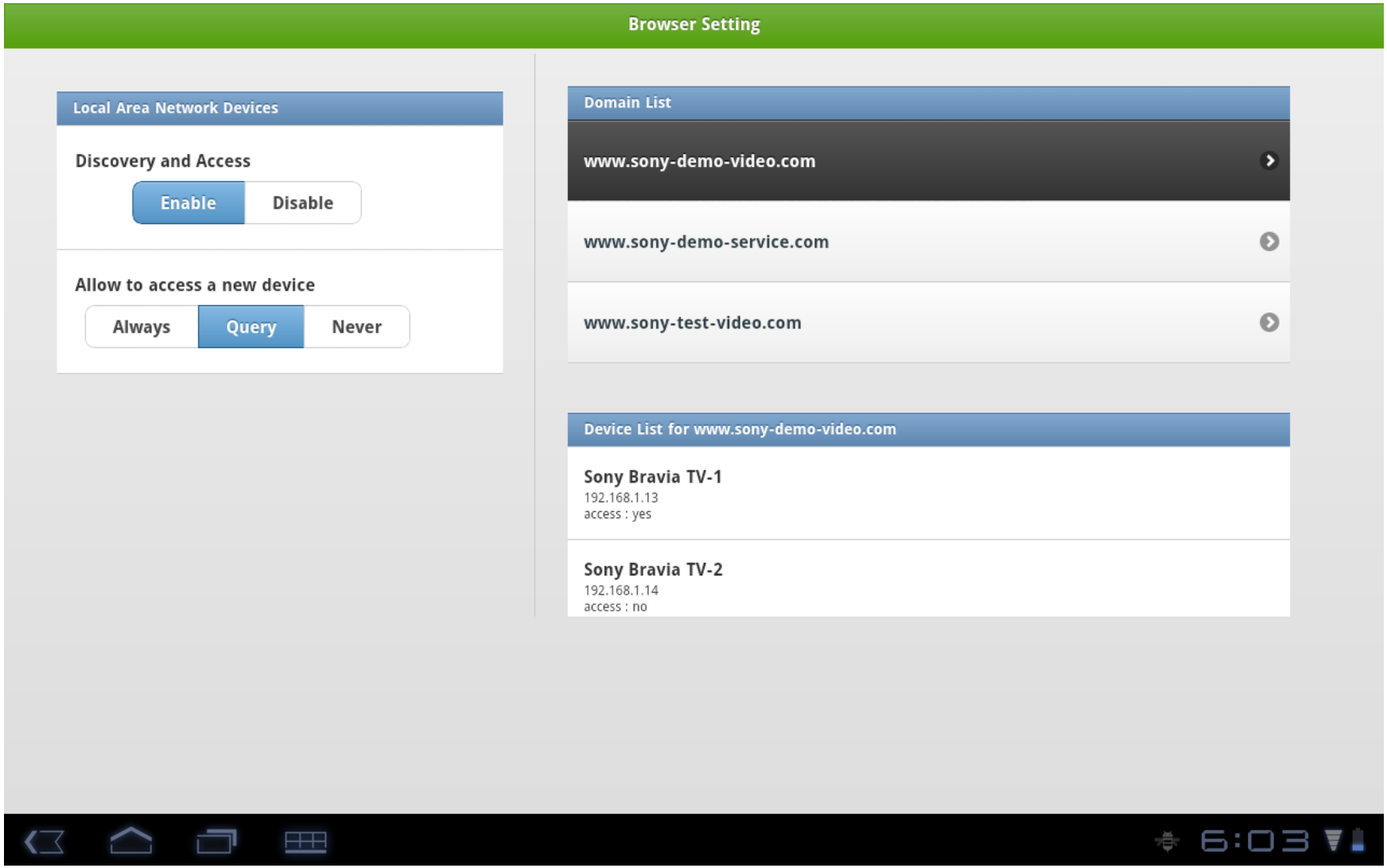

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THANK YOU FOR YOUR ATTENTION !

Believe that anything you can imagine, you can make real

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