Overview of IPTV Forum Japan's Hybridcast Technical Specification

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What is Hybridcast

- Technology platform for broadcast and broadband hybrid service that uses HTML5 as an application service environment

- Mar 2013, IPTV Forum Japan published technical specification
- Sep 2013, NHK started Hybridcast service
- Jan 2014 -, Major commercial broadcasters are carrying out trial services

- Hybridcast-ready TV: Toshiba, Panasonic, Sharp, Mitsubishi.

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This Presentation

- Introduces IPTV Forum Japan ***"Hybridcast Technical Specification v1.0"***
  - Published in March 2013.
  - English translation is now available at: http://www.iptvforum.jp/en/download/

- Describes how Hybridcast makes HTML5 apps work with broadcast content

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Technical Specification

IPTVFJ STD-0010

- **Integrated Broadcast-Broadband System Specification**
  - System model
  - Application model and its lifecycle control
  - Receiver functions

IPTVFJ STD-0011

- **HTML5 Browser Specification**
  - Guidelines and rules for applying HTML5 to Hybrid TV
  - Extensions - Additional JS objects and APIs

* Hybridcast specifications do not define profile for use of W3C standards, such as HTML elements, APIs and etc.

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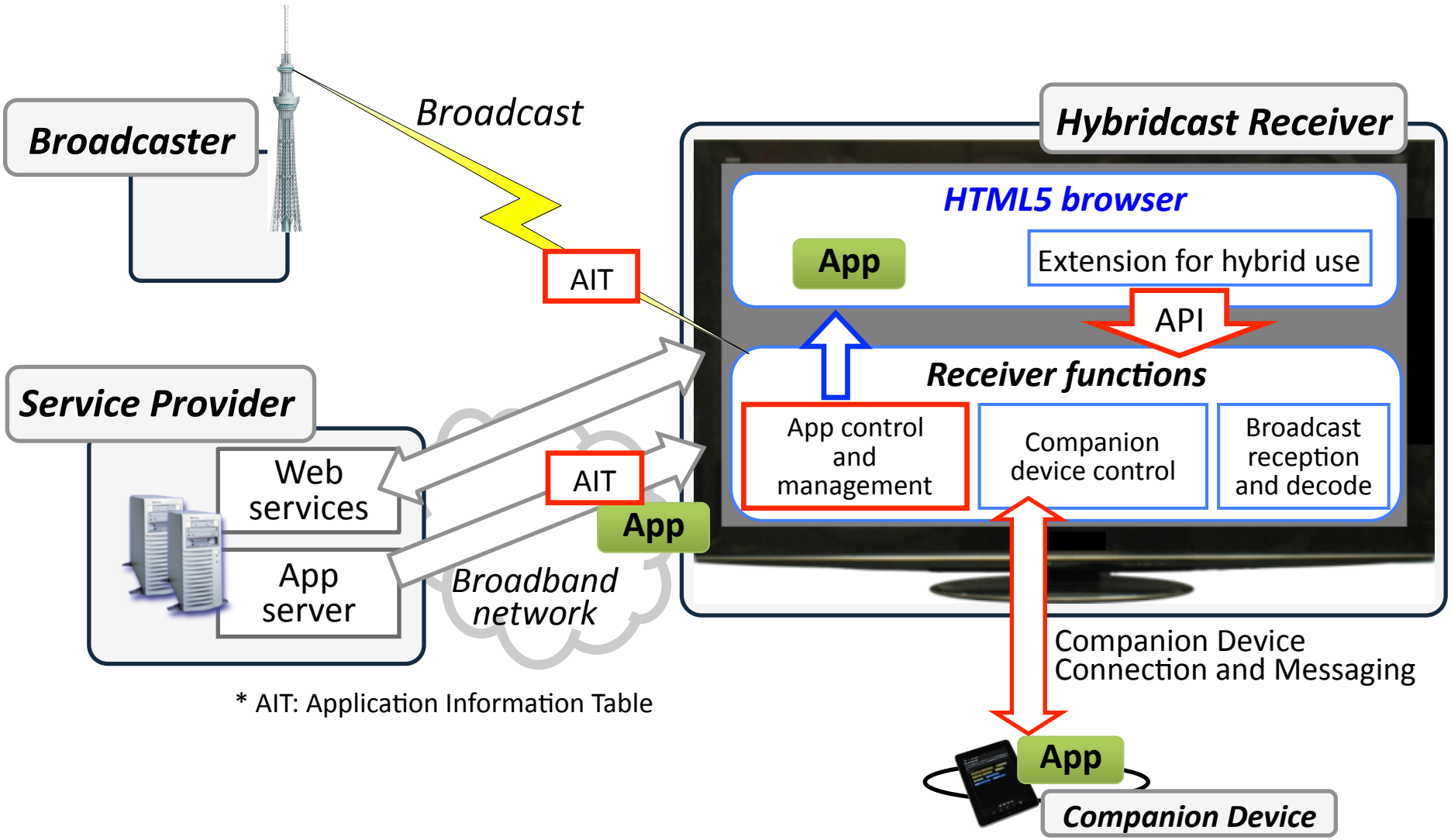
Overall Architecture



* AIT: Application Information Table

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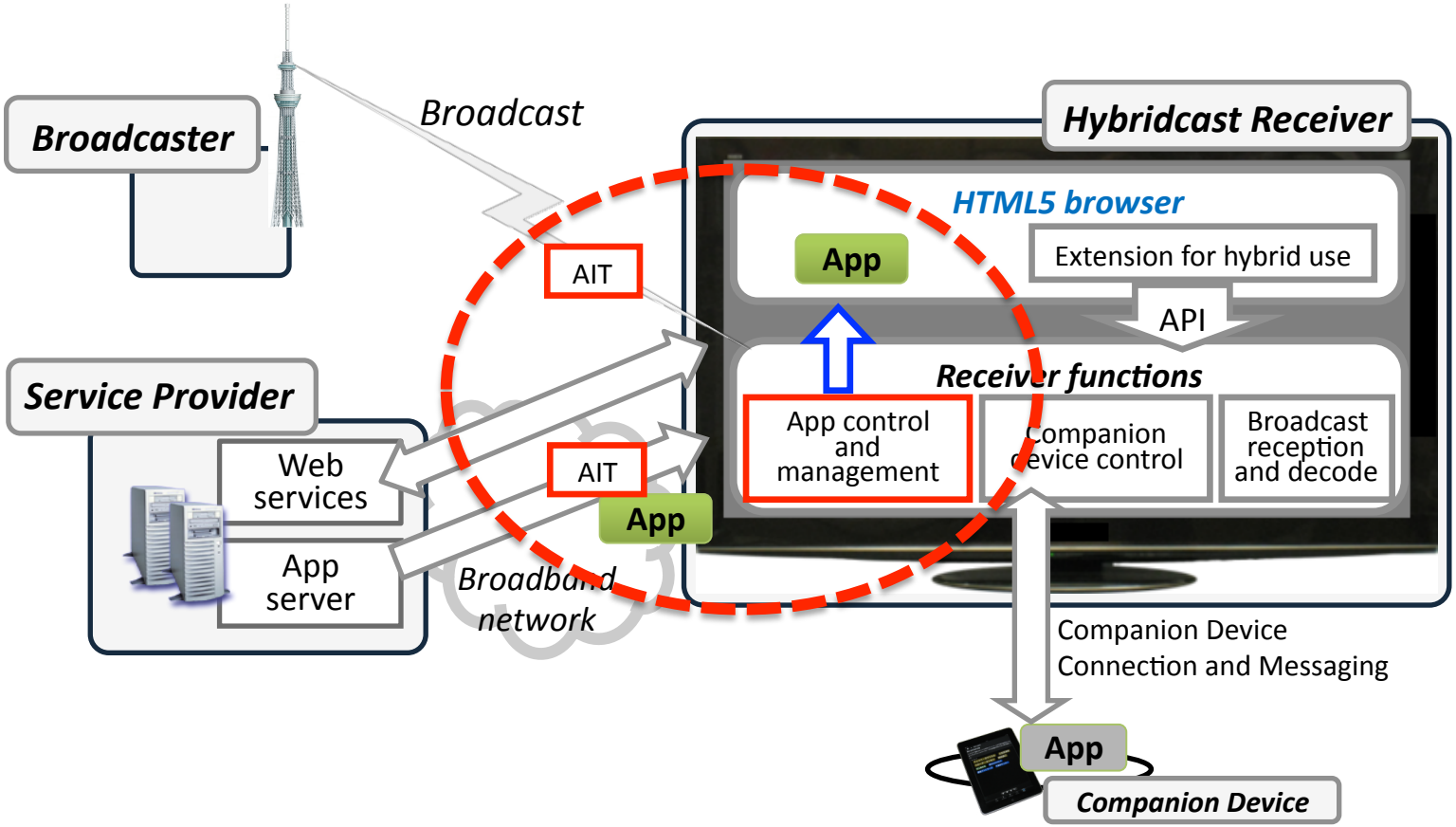
1. Application Control and Management



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Application Launch by AIT

- Function of AIT
  - Assign application's execution context
    - Entry URL, App ID, boundary, permission
  - Control application's lifecycle
- Delivery
  - Multiplexed in broadcast signal
  - Acquired over http
- Application is launched
  - By broadcast AIT
  - By function call in data broadcast content
    - AIT is retrieved from network server

Used in current operation

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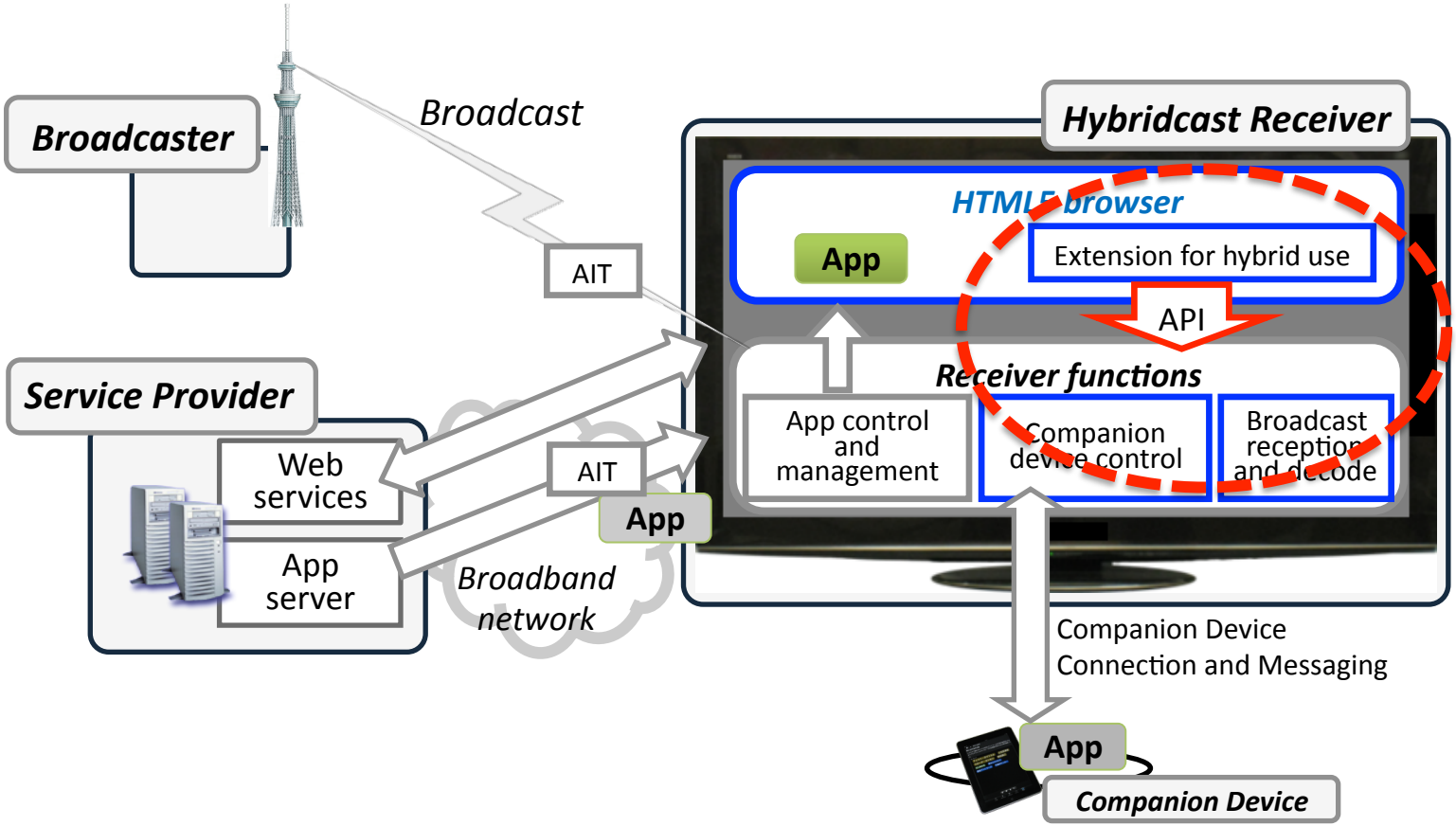
2. Enhanced APIs for HTML5



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Enhancements to HTML5

Objects/Functions	Purpose
Application object	An object which represents an application itself.
ApplicationInformationTable object	An object which represents application control signals.
ReceiverDevice object	An object which represents functionalities of a Hybridcast receiver and information managed by a Hybridcast receiver.
EIT related objects	Objects which handle broadcasting program schedule information.
StreamEventTarget object	An object to handle stream events delivered over broadcast channel.
BMLCompatObject object	An object to access to a part of functionalities of BML browser such as non-volatile memory.
Companion device collaboration related functions	Functions to instruct initial URL of an application to run on companion devices and to send/receive messages to/from the devices are defined.
BroadcastVideoObject element	An object element with additional type to represent broadcast video instead of video element in HTML5.

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Presenting Broadcast Video/Audio

- Display video/audio of currently selected broadcast channel
  <object type="video/iptvf-broadcast">

- CSS to specify coordination and z-order

- Broadcasting specific behavior
  - Presentation of broadcast video/audio must be kept even during document transition

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Broadcast Resource Access API

Objects/Functions		Purpose
ReceiverDevice object		
	getCurrentEventInformation()	Obtain broadcast programme information
StreamEventTarget object		
	EventIDUpdateListener	Programme change detection
	GeneralEventMessageListener	Trigger message (= StreamEvent) detection

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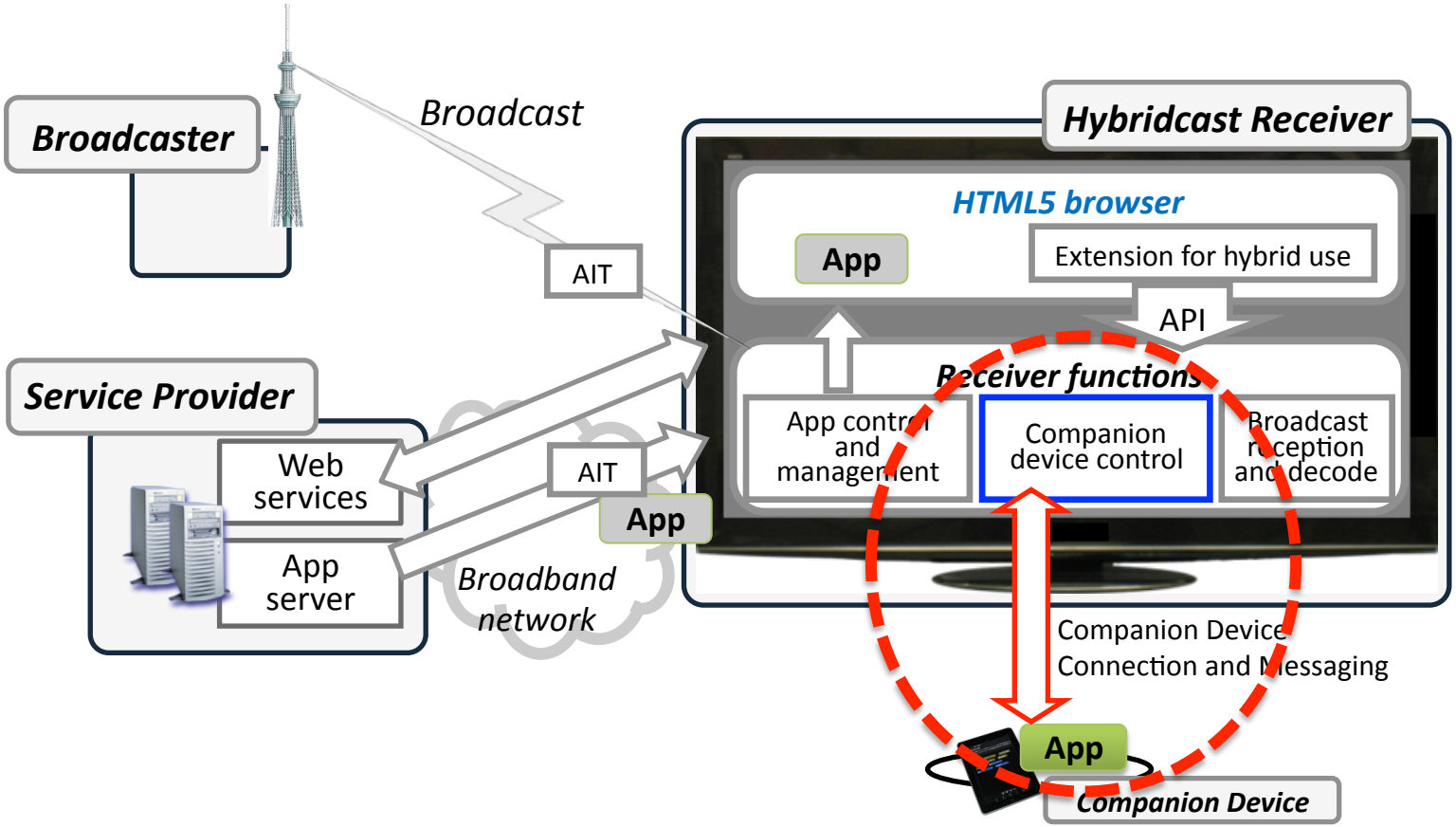
3. Second-screen Service Functions



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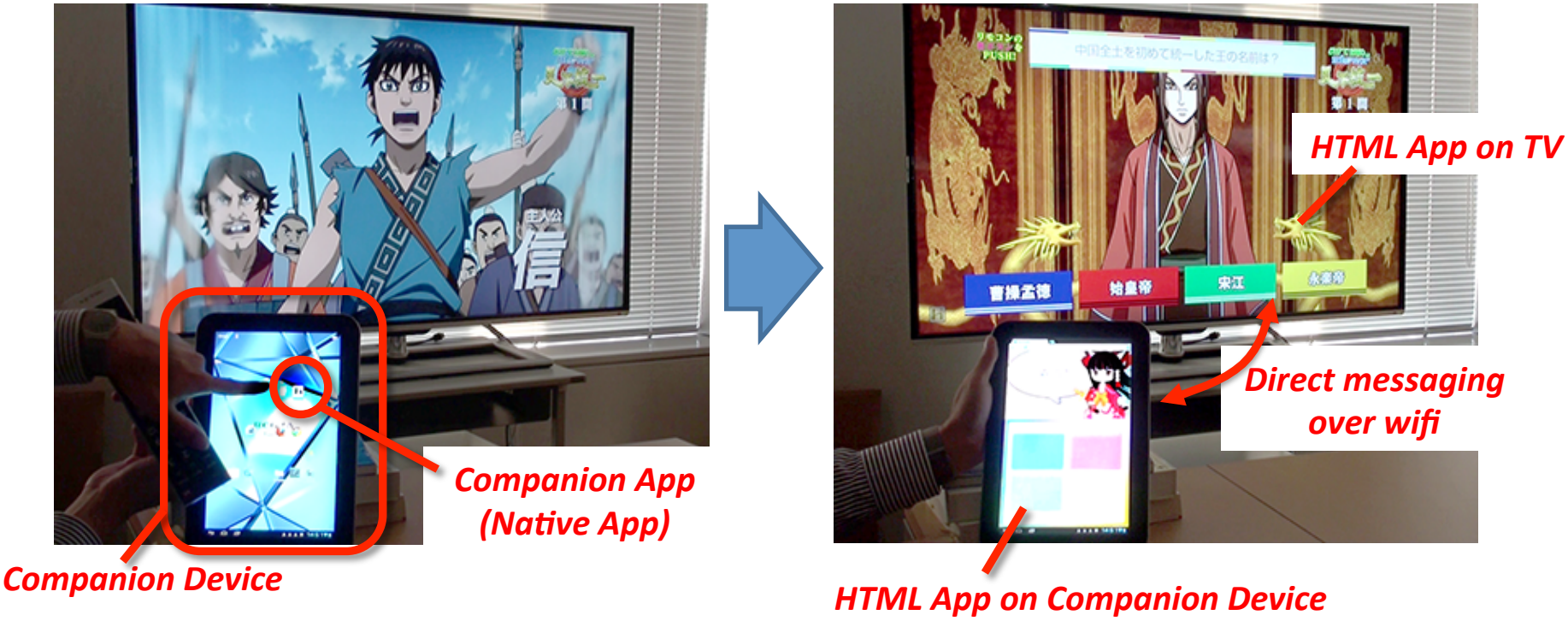
Hybridcast's second-screen function



- Companion Application
  - Works as a browser for HTML5 application on second screen device.
  - Makes direct connections to TV over wifi.
  - Is developed and distributed by TV manufacturer for mobile platform, i.e. Android / iOS.
  - Neutralizes a maker-dependant implementation of inter-device communication.

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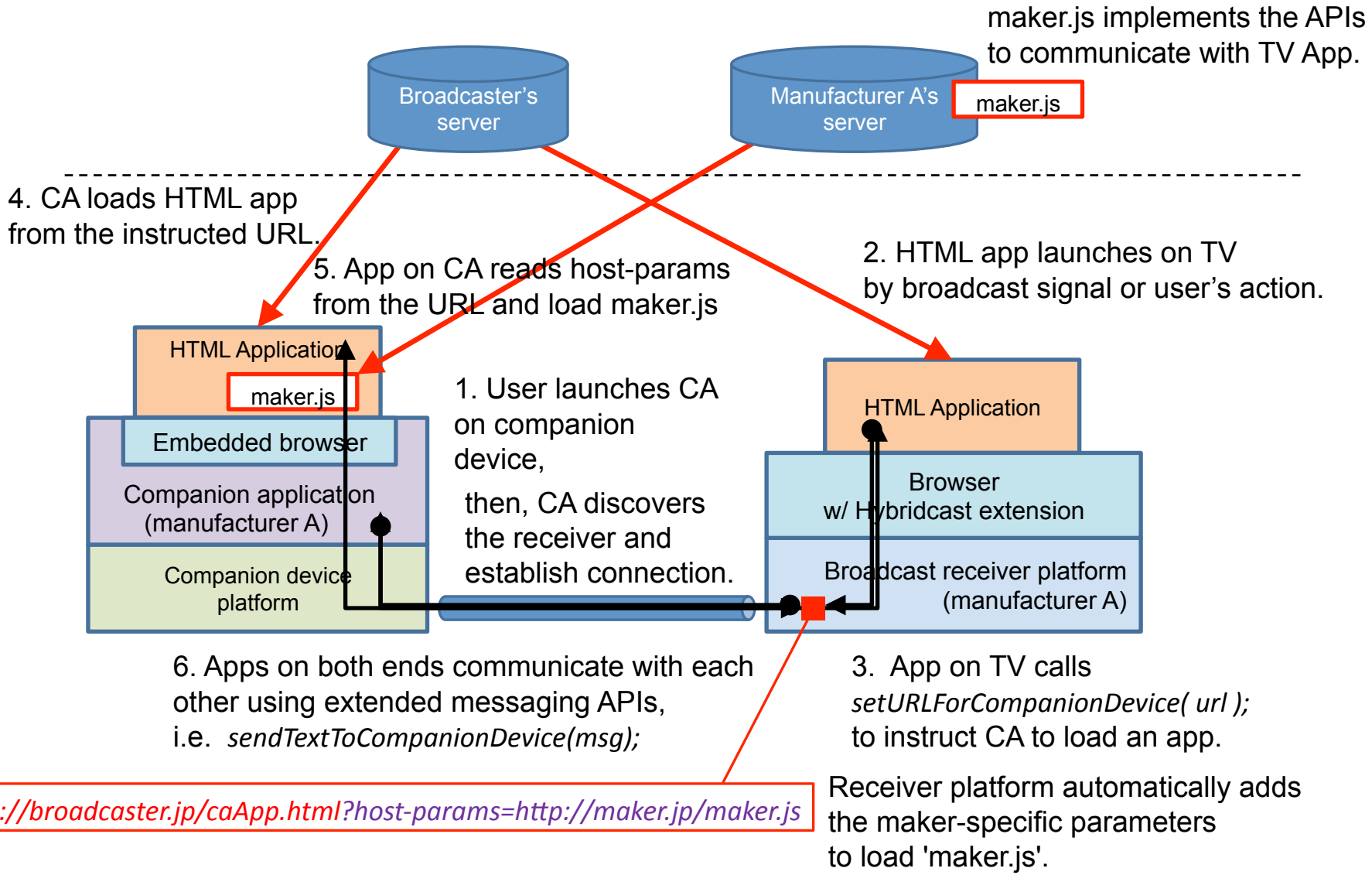
Companion App Launch Sequence



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Companion Device Communication APIs

- setURLForCompanionDevice()
- getCompanionDeviceList()

- sendTextToCompanionDevice()
- addCompanionDeviceTextMessageListener()

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Conclusion

- Hybridcast is an actual practice of Hybrid TV with HTML5
  - 6 months since started.

- Overview of Hybridcast Technical Specification
  - To identify further requirements
  - Towards establishment of better environment for Hybrid TV services

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