# Creating Extensions for Safari

## Part One

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N
W
E
S

HTML5

CSS3

JavaScript

Native Code

Cross Platform

Secure

Crashes

# What You'll Learn

- When to make a Safari Extension
- What Safari Extensions can do
- How to build a Safari Extension

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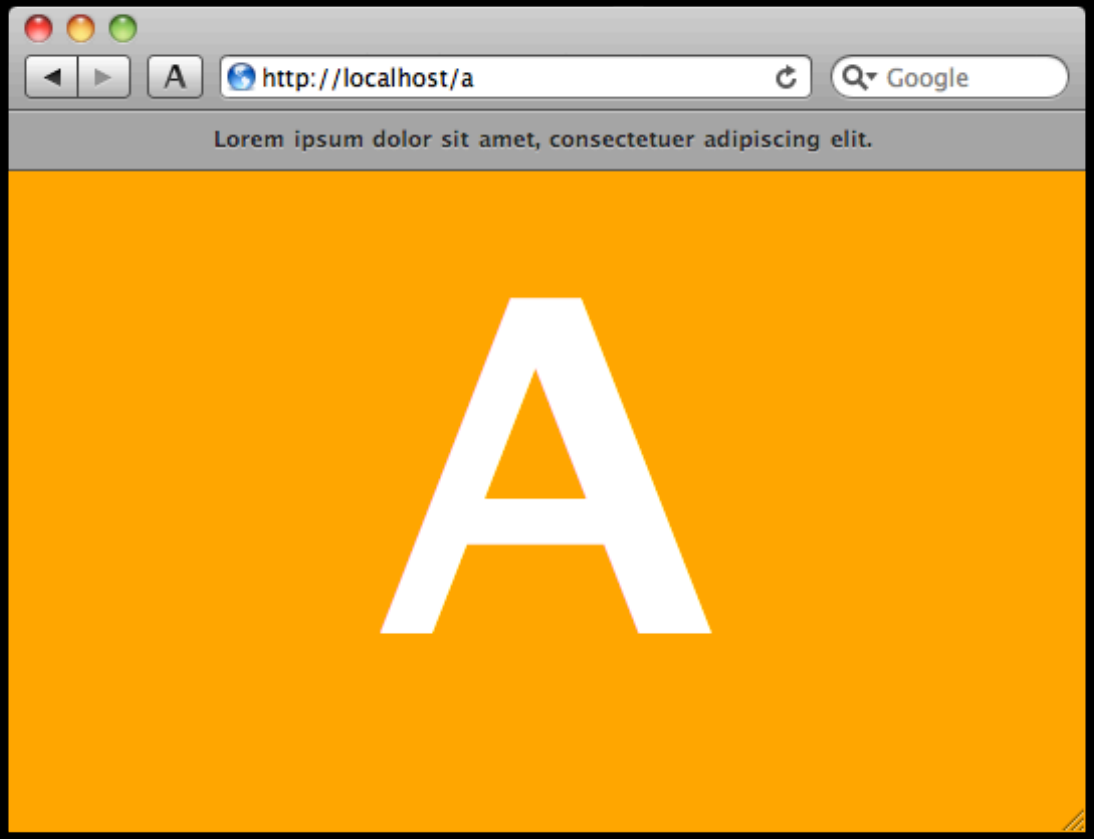
# When to Make a Safari Extension

# User Interface

# Extended Interface With Extensions



# Non-Persistent Experience

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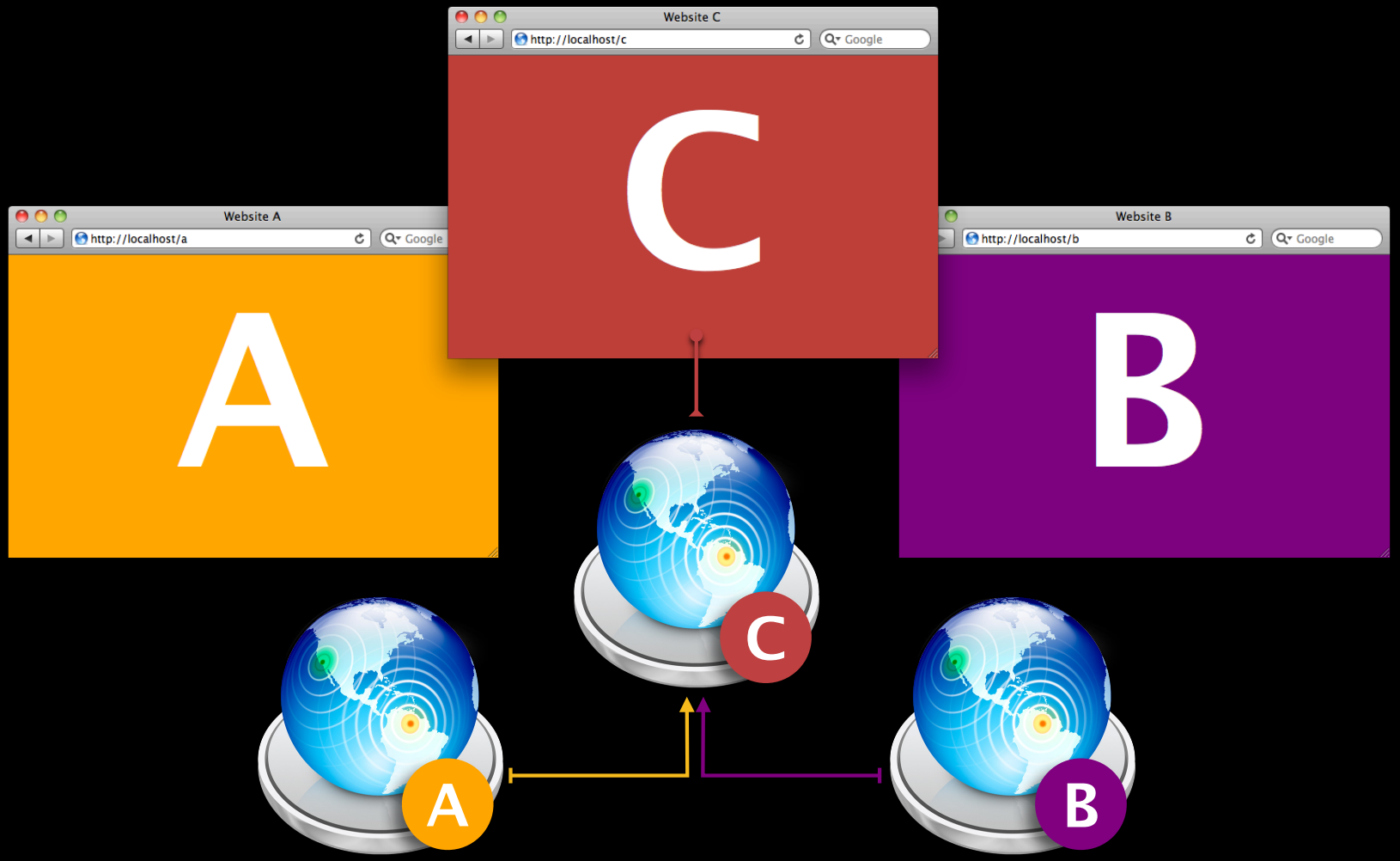
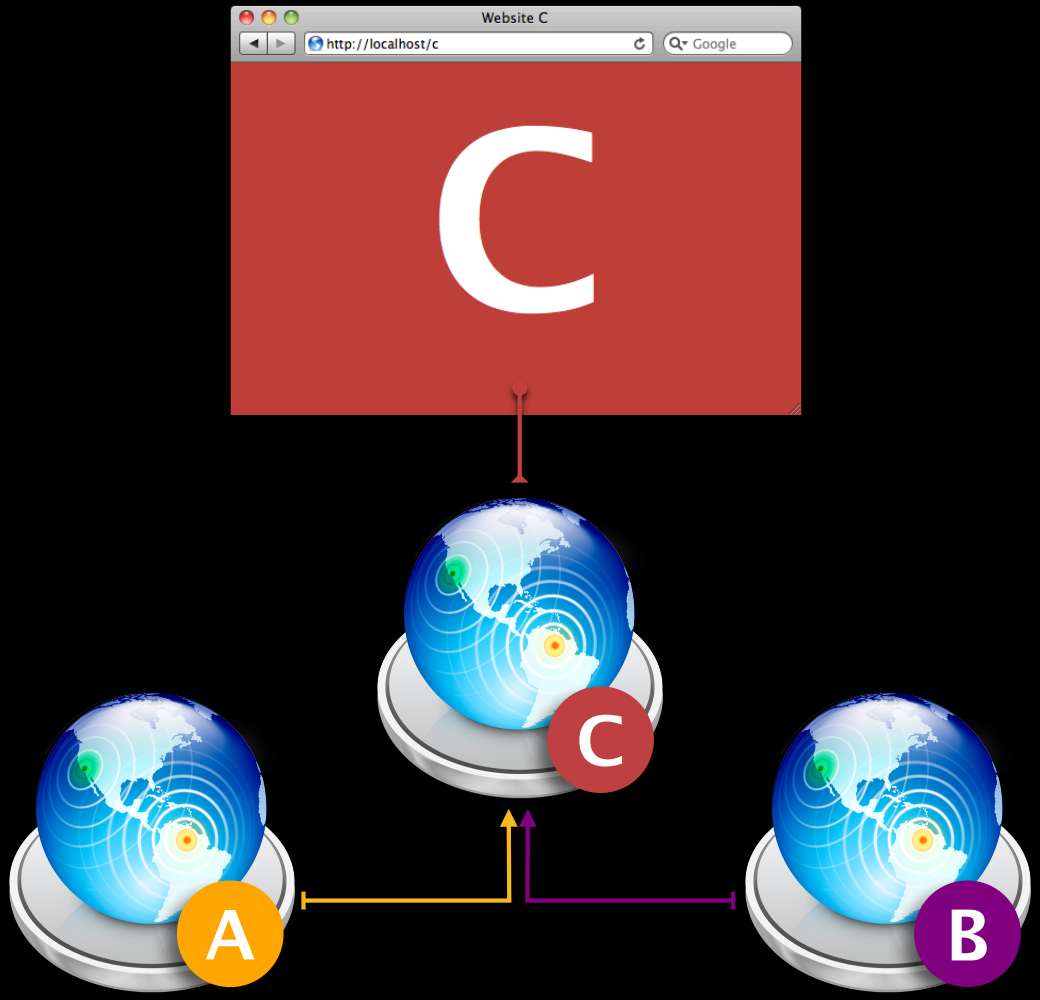
# Non-Persistent Experience With Extensions

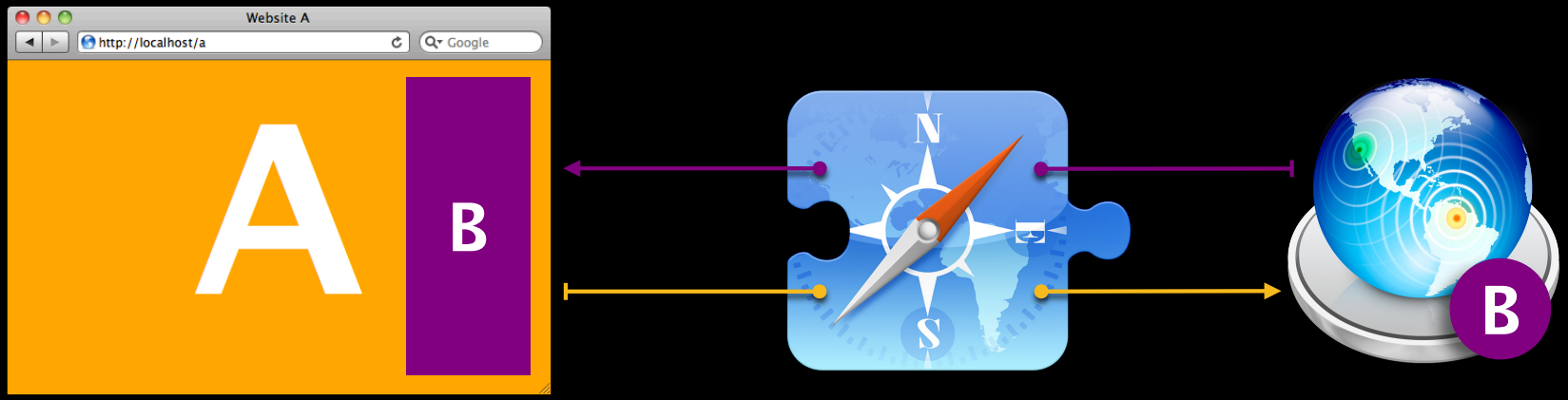
# Mashups


Website C
http://localhost/c
Google
C
Website A
http://localhost/a
Google
A
Website B
http://localhost/b
Google
B
C
A
B

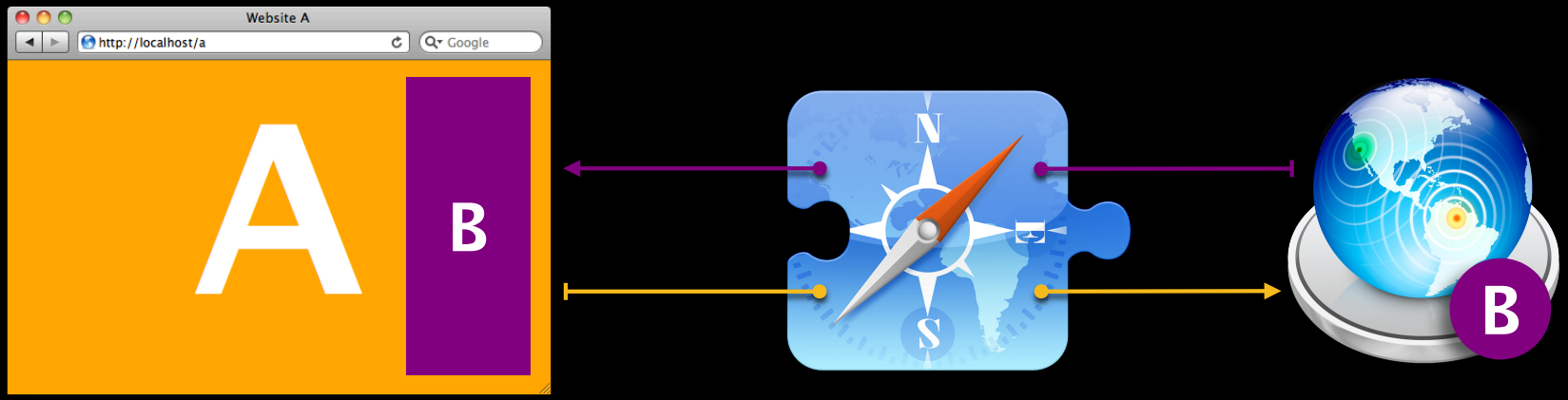
# Mashups



# Mashups with Extensions



# Mashups with Extensions



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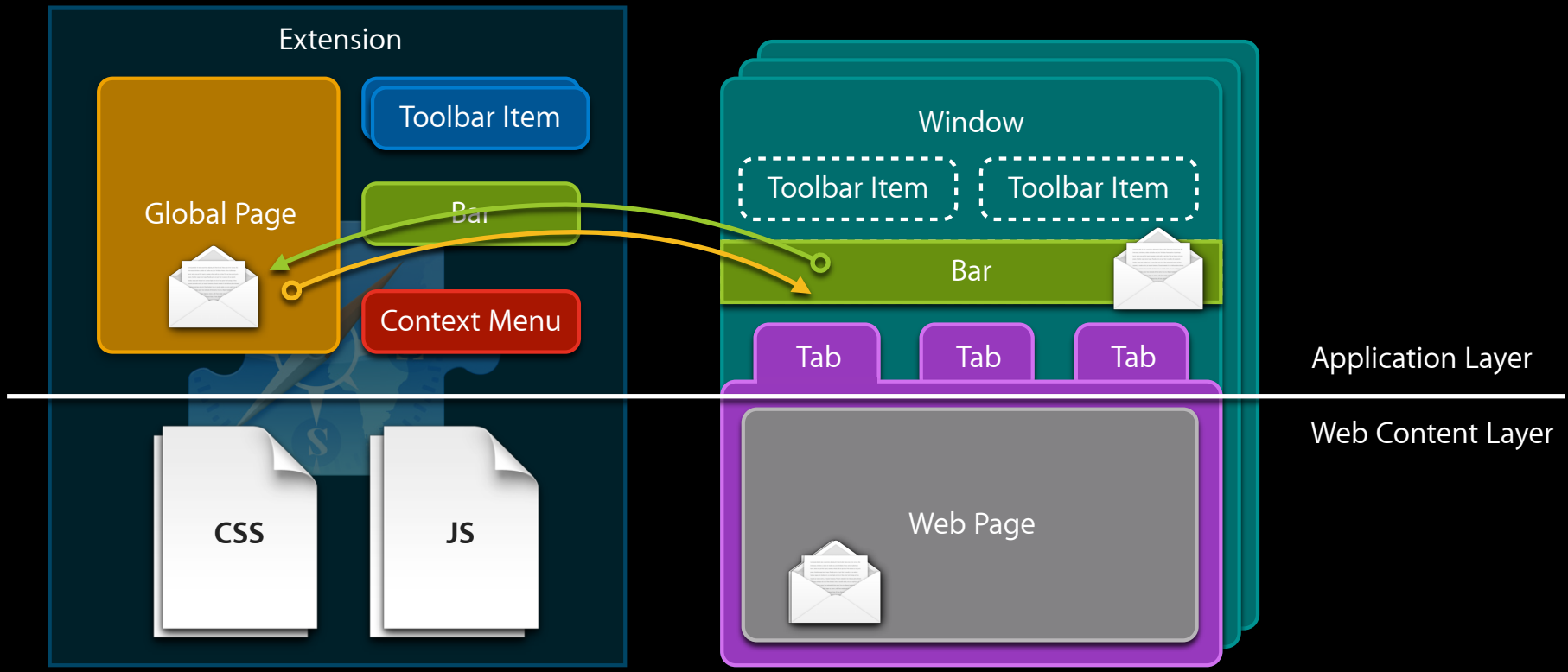
# What Safari Extensions Can Do

## Demo


Extension
Global Page
Toolbar Item
Bar
Context Menu
CSS
JS
Window
Toolbar Item
Toolbar Item
Bar
Tab
Tab
Tab
Web Page
Application Layer
Web Content Layer

# Application Layer

# window.safari

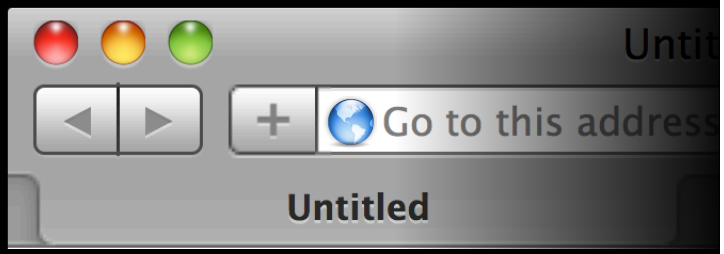
.application

safari.safariextension

safari.self

# Windows and Tabs

- Access to all browser windows and tabs
- Can be created, closed and reordered
- Serve as access points to other objects
- Members of the event dispatch hierarchy

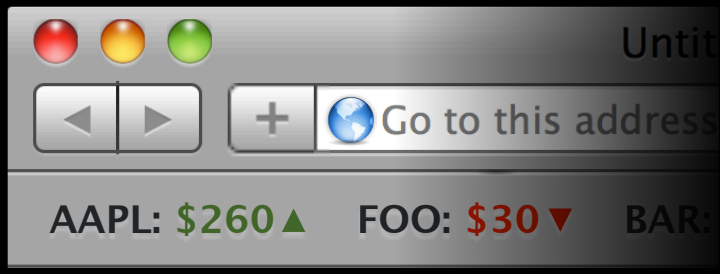



```
safari.application.browserWindows

safari.application.openBrowserWindow()
```

# Bars

- Loaded once per browser window
- Displays above Safari's Tab bar
- Fixed height of 30px
- Access to the Global Page




```
safari.extension.bars

safari.self
```

# Toolbar Items

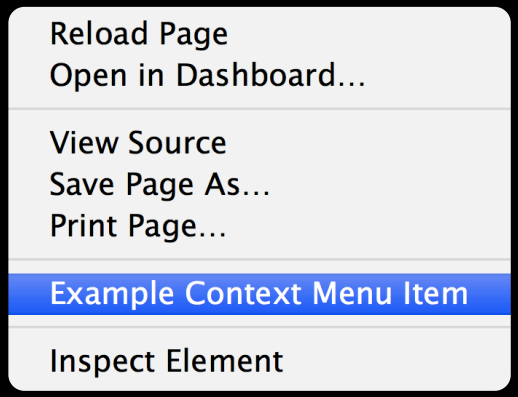
- Created once per browser window
- Inserted in the toolbar by default
- Image styled to achieve a standard look
- Supports numerical badges
- Sends “validate” and “command” events per item

```
safari.extension.toolbarItems
```

```
event.target.badge = 42
```

# Context Menu Items

- Appended to the web content's context menu
- Content scripts can provide context
- Sends "contextmenu" event each time
- Sends "validate" and "command" events per item




```
event.contextMenu.appendContextMenuItem(…)
```

# Validate and Command Events

- Validate events are sent for “interesting” user actions
- Validate event listeners should disable or update the item
- Command events are sent when the user clicks the item
- Events are sent to the event target and bubble up

```
safari.application.addEventListener(“validate”, …)

        event.target.disabled = true
```

# Global Page

- Loaded once
- Not visible
- Main extension logic
- Store large objects to share
- Access to Bars

```
safari.extension.globalPage
safari.application.activeBrowserWindow
```

# Settings and Secure Settings

- Exposed in Safari's preferences
- Key/value storage
- Anything that is JSON serializable
- Secure storage available for sensitive data
- Default value when key is not set yet

```
safari.extension.settings.foo = {bar: 42, baz: false}

delete safari.extension.secureSettings.bar
```

# Web Content Layer

```
safari.extension
safari
safari.self
```

# Content Scripts

- Evaluated with each page load
- Only for pages that match a whitelist and blacklist
- Can load before or during the load event
- Isolated in a separate world — no global variable conflicts
- Scripting permissions are the same as the page
- Use message passing to talk to the Application Layer

```
safari.self.tab.dispatchMessage(“foo”, {bar: 42})

safari.self.addEventListener(“message”, …)
```

# Content Styles

- Applied to each page load
- Only for pages that match a whitelist and blacklist
- Treated as a user stylesheet — use !important to override the page
- Relative URLs load images from your extension bundle

# Full Page Content

- Lets you provide an experience like Top Sites
- No URL is shown in the location field
- Load an extension HTML file in a browser window
- Access to extension content APIs in the normal world

```
safari.application.activeBrowserWindow.activeTab.url =
        safari.extension.baseURI + “foo.html”
```

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# How to Build a Safari Extension

## Demo

# Extension Builder

- One-stop shop to define and build your extension
- Requires a free Safari Developer certificate to build
- Manage all your under development extensions

http://developer.apple.com/safari

# Working with the Global Page

```
function showCurrentTweet() {
  const globalWindow = safari.extension.globalPage.contentWindow;
  const tweets = globalWindow.tweets;

  if (tweets && tweets.length)
    showTweet(tweets[globalWindow.currentTweetIndex || 0], true);
}
```

# Working Inside the Global Page

```
function showTweet(tweet) {
  const bars = safari.extension.bars;

  for (var i = 0; i < bars.length; ++i) {
    if (bars[i].contentWindow.showTweet)
      bars[i].contentWindow.showTweet(tweet);
  }

  for (var i = 0; i < tweetFlowTabs.length; ++i) {
    if (tweetFlowTabs[i].page)
      tweetFlowTabs[i].page.dispatchMessage("show-tweet", tweet);
  }
}
```

# Responding to Commands

```
safari.application.addEventListener("command", performCommand, false);

function performCommand(event) {
  switch (event.command) {
  case "show-twitter-flow":

    const browserWindow = safari.application.activeBrowserWindow ||
      safari.application.openBrowserWindow();

    browserWindow.activeTab.url = safari.extension.baseURI + "tweet-flow.html";

    break;
  }
}
```

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# Summary

- Sign up for the free Safari Developer program
- Turn on the Develop menu and Extensions
- Get started with the Extension Builder

# More Information

**Vicki Murley**
Safari Technologies Evangelist
vicki@apple.com

**Safari Dev Center**
http://developer.apple.com/safari

**Safari Extensions Documentation**
http://developer.apple.com/wwdc

# Related Sessions

| | |
|---|---|
| Creating Extensions for Safari (Part Two) | Marina<br>Wednesday 10:15AM |
| Getting the Most Out of Safari Integrated Developer Tools | Marina<br>Wednesday 11:30AM |

# Labs

| | |
|---|---|
| Safari Extensions Lab | Wednesday 2:00PM – 6:30PM |
| WebKit Lab | Wednesday 2:00PM – 6:30PM |
| Safari Internet Plug-ins Lab | Thursday 9:00AM – 11:15AM |
| Safari Extensions Lab | Thursday 2:00PM – 6:00PM |
| Safari Open Lab | Friday 9:00AM – 12:30PM |
| Safari Internet Plug-ins Lab | Friday 9:00AM – 12:30PM |

# Q&A

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