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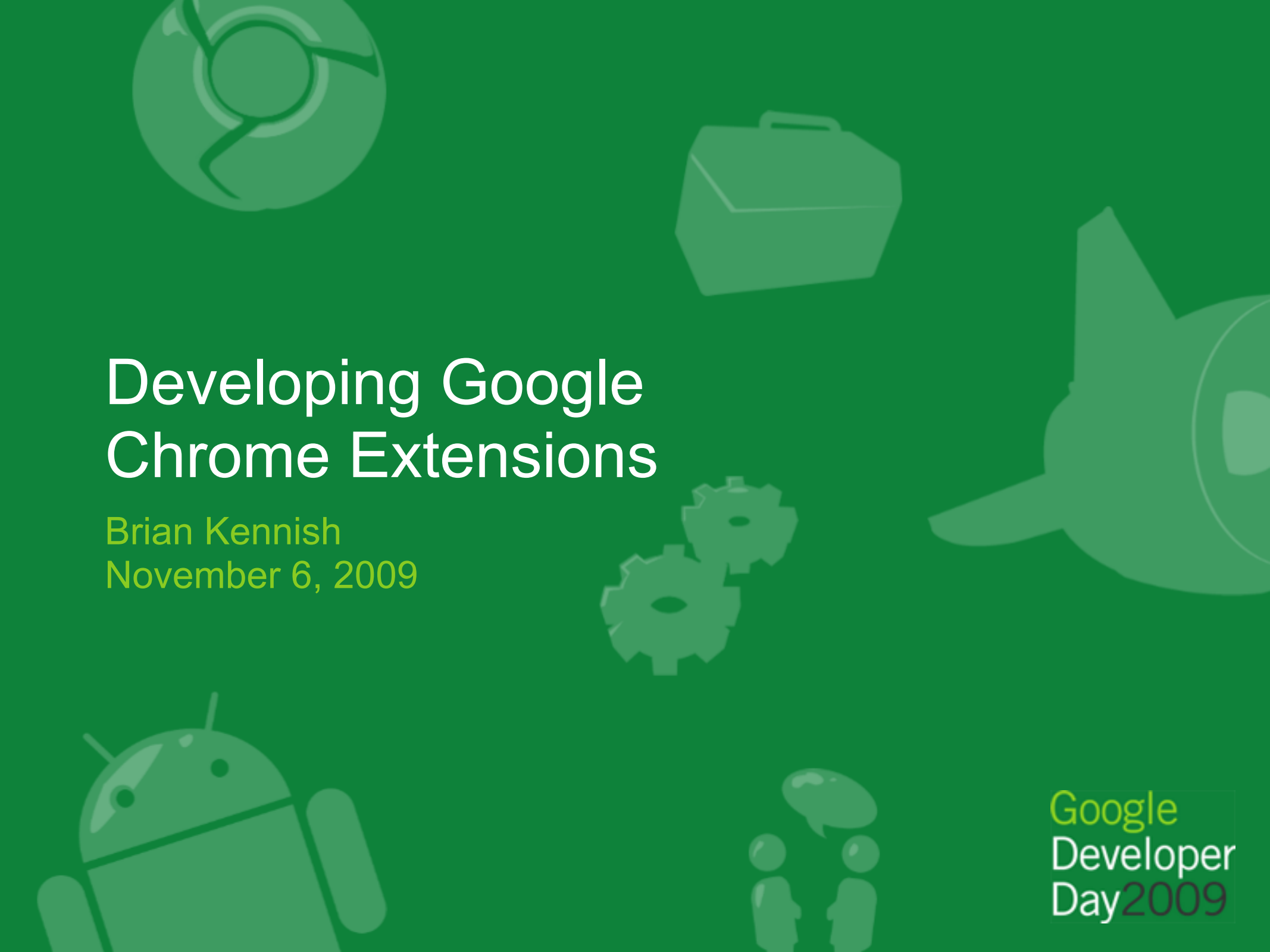

# Developing Google Chrome Extensions

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Google Developer Day 2009

# Agenda

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  - Why You Should Work on Extensions
  - When the Extension System Ships
- How to Build Extensions
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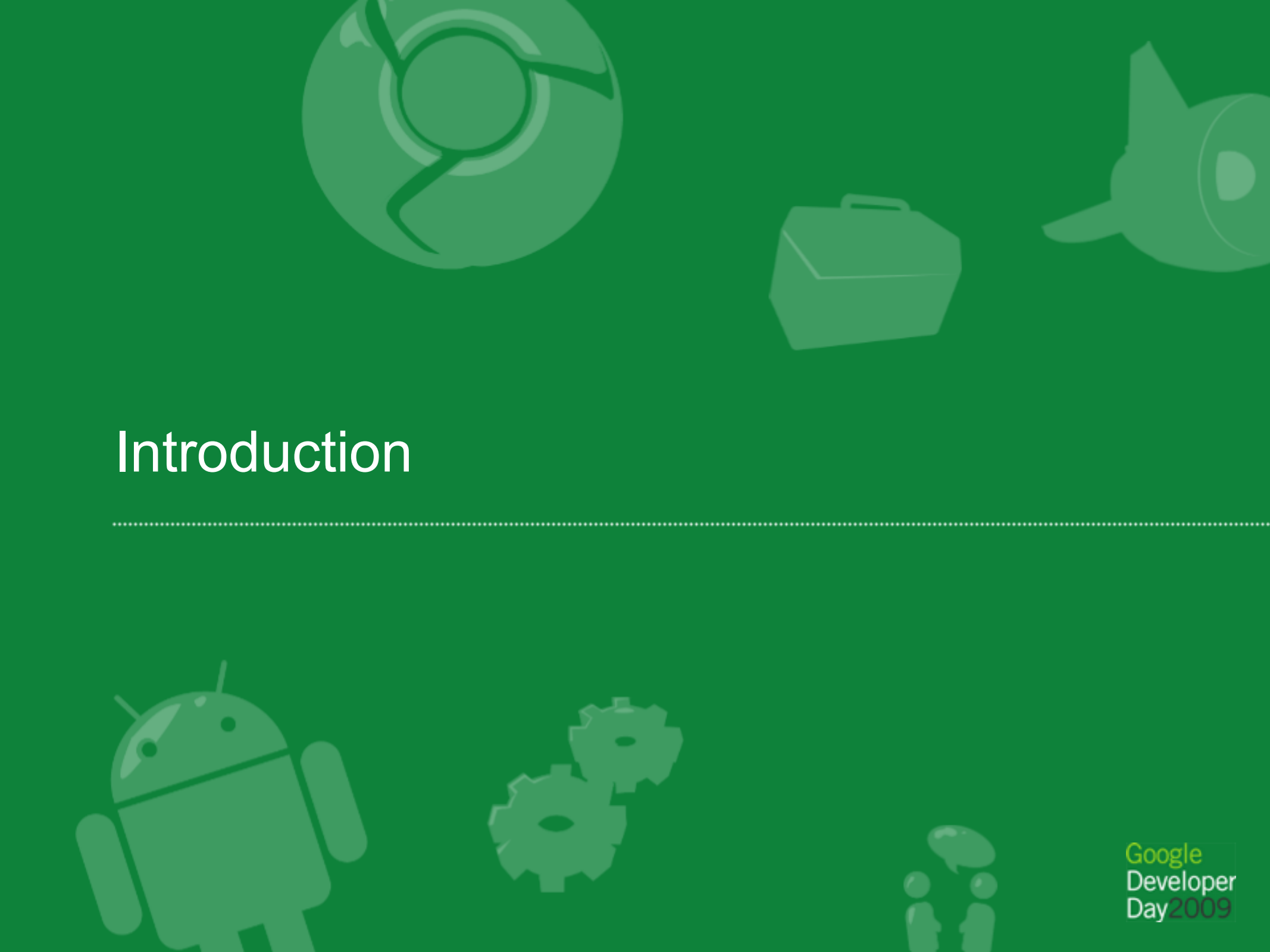
- Summary
- Q&A



# Introduction

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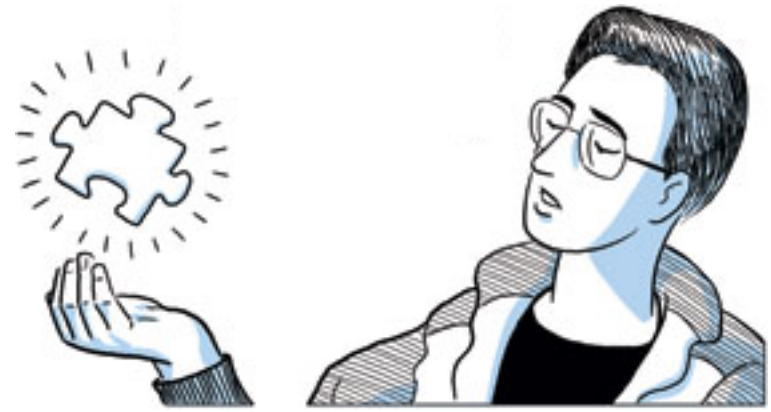
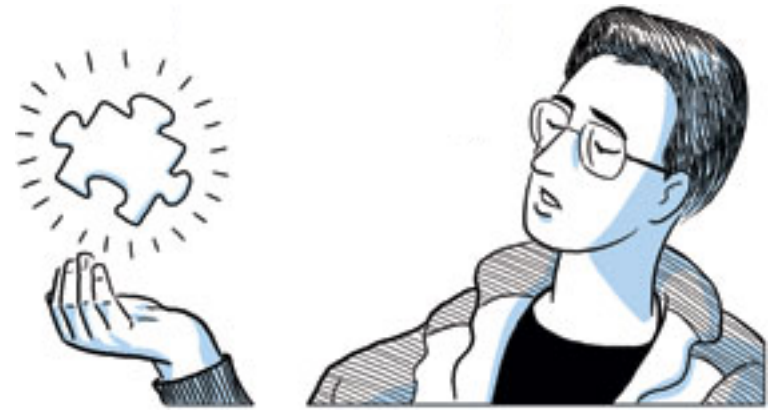
# What Extensions Are

- Programs that modify and enhance Google Chrome's functionality
- Written in HTML, CSS, and JavaScript
- Integrated with browser features using a simple API
- Developed iteratively as webpages



# What Extensions Are

- Installed instantly, without a browser restart
- Updated automatically like Google Chrome itself
- Transparent about their cross-origin and browser capabilities
- Run in separate processes like Google Chrome tabs



# Demo: Gmail Checker

Shows how many unread messages are in your inbox.

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# Demo: Subscribe in a Feed Reader

Displays a subscription button
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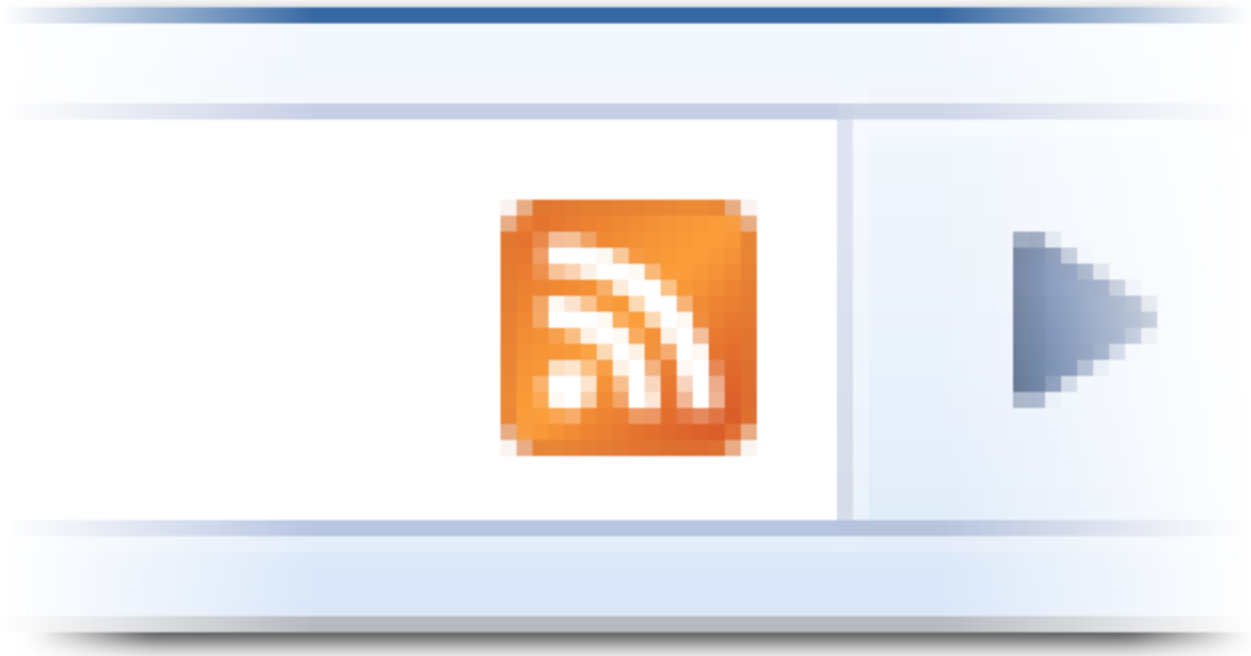

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# Demo: Qrome

Turns URLs and other text into QR codes to make them easy to transfer to mobile devices.

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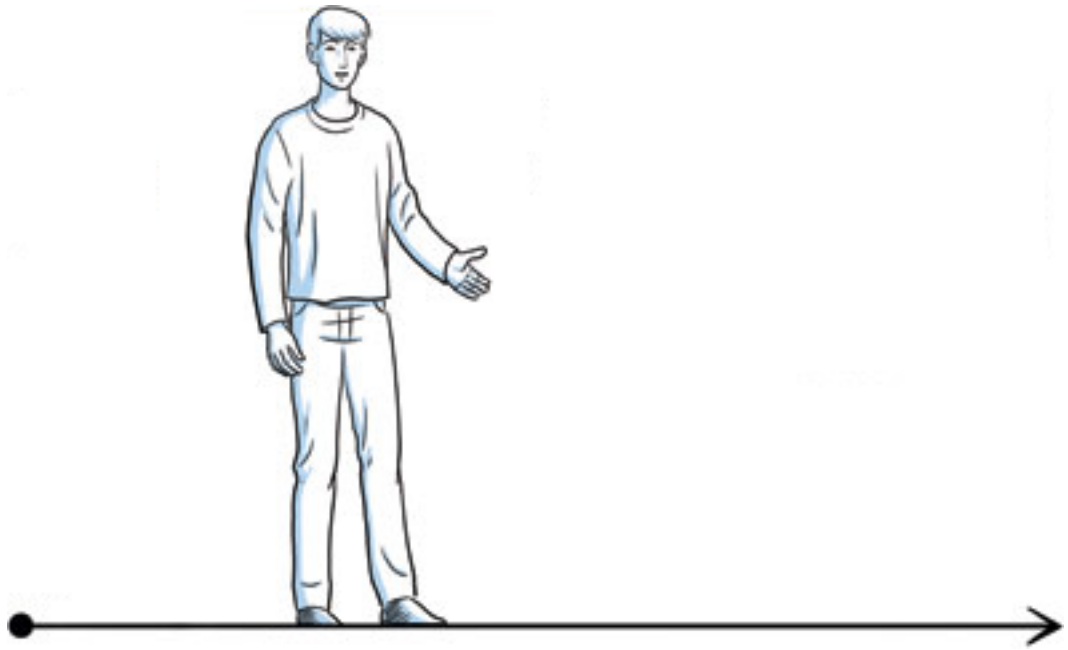
# Why You Should Work on Extensions

- Part of an important and fast-growing platform
- Persistent presence on users' machines
- Source of traffic to your site
- Easy and fun

# When the Extension System Ships

- In the Google Chrome Dev channel right now
- In the Beta channel later this quarter, along with a gallery
- In the Stable channel soon after



# How to Build Extensions

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# Structure of an Extension

Compressed directory containing:

- **manifest file** (manifest.json) — metadata that describes the extension

# Structure of an Extension

And at least one of these components:

- **browser action** or **page action** — UI surface
- **content scripts** — CSS and JavaScript injected into pages
- **background page** — long-running script that handles tasks or state
- **utility web files** — additional content

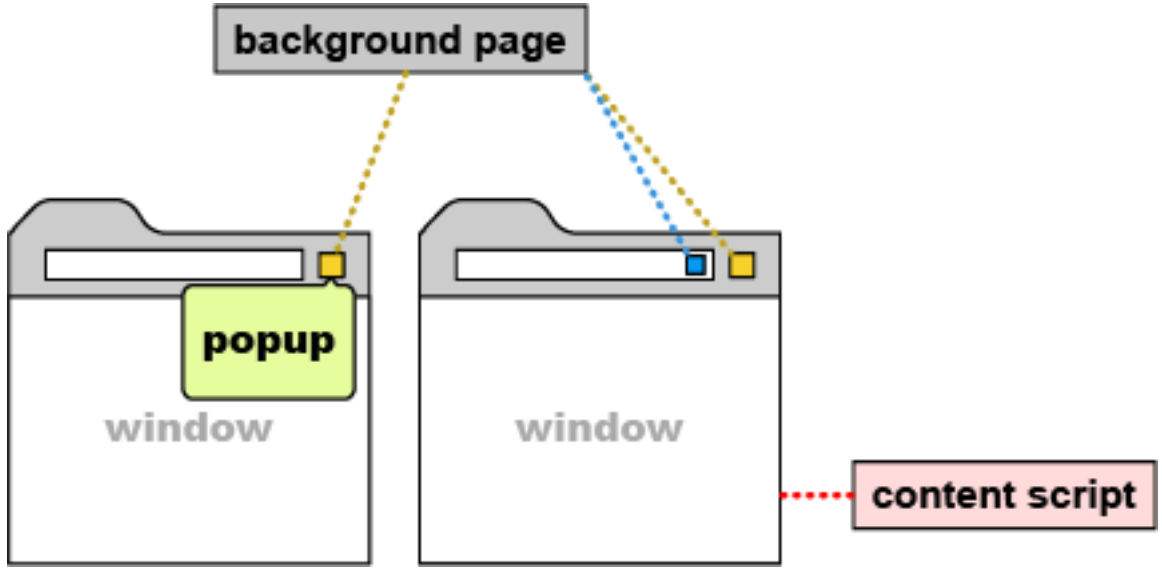
# Structure of an Extension

And at least one of these components:

- **plugins** — NPAPI binaries (see https://developer.mozilla.org/en/Plugins)
- **theme** — custom browser skin (see http://code.google.com/chrome/extensions/themes.html)

# Extension Communication

Internal:




External:

- Cross-origin XHR (requires permission)

# Layout of the Extension API

`chrome` is the top-level object and exposes:

- `chrome.extension.*` — sends extension messages and resolves the URLs of extension files
- `chrome.browserAction.*` — sets the appearance of browser actions and their badges
- `chrome.pageAction.*` — enables and disables page actions

# Layout of the Extension API

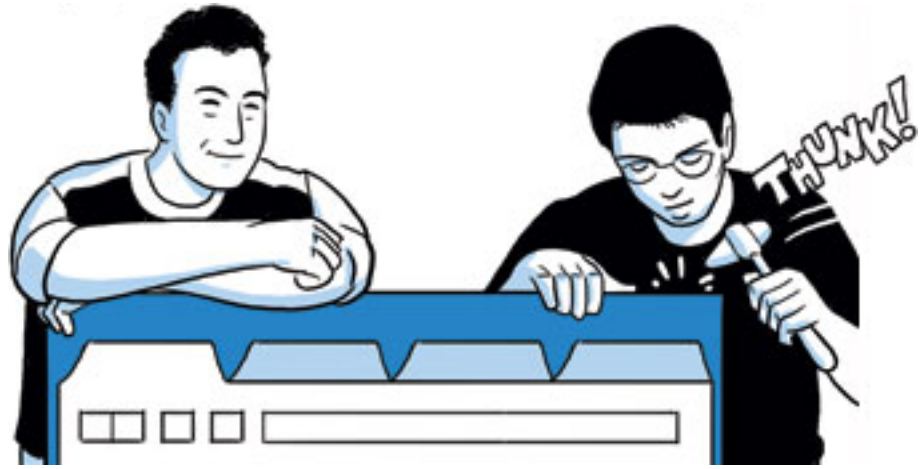
`chrome` is the top-level object and exposes:

- `chrome.windows.*` — manages windows (requires *tabs* permission)
- `chrome.tabs.*` — manages tabs (requires `tabs` permission)
- `chrome.bookmarks.*` — manages bookmarks (requires `bookmarks` permission)

# Other APIs

Extensions can also access:

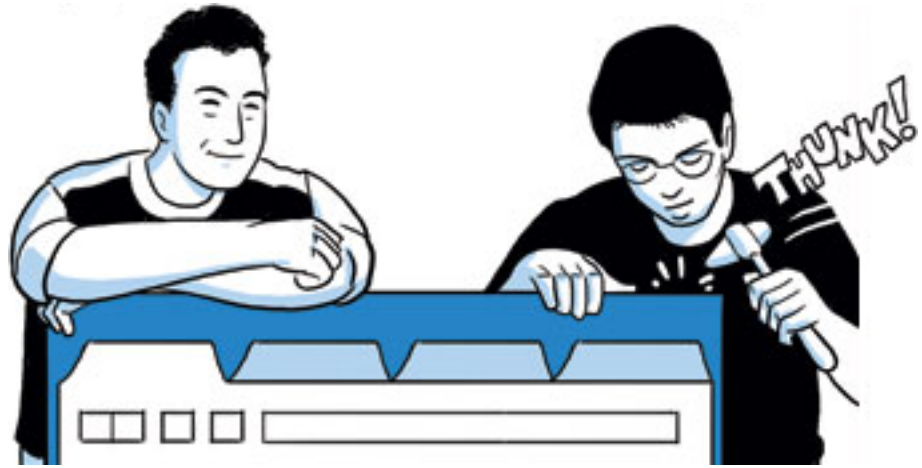
- standard DOM and JavaScript APIs (e.g., HTML traversal and manipulation)
- HTML5 APIs (e.g., localStorage)
- WebKit APIs (e.g., experimental CSS properties)



# Other APIs

Extensions can also access:

- V8 APIs (e.g., JSON parsing and stringification)
- bundled JavaScript libraries (e.g., jQuery)
- more (e.g., Google AJAX APIs)



# Step-by-Step Example: Chritter

A Twitter button for your toolbar.

# Step One

## Add UI

```
{
  "name": "Chritter",
  "version": "1.0",
  "description": "A Twitter button for your toolbar.",
  "icons": {"128": "icon.png"},
  "browser_action": {
    "default_icon": "browseraction.png",
    "default_title": "Chritter"
  }
}
```

manifest.json

# Step Two

## Include a Popup

```
<html>
  <body>
    <div style="white-space: nowrap">
      Wouldn't it be nice to see some tweets here?
    </div>
  </body>
</html>
```

popup.html

# Step Three

## Fetch Public Data with XHR

```
req = new XMLHttpRequest();
req.open(
  'GET',
  'http://twitter.com/statuses/public_timeline.json'
);
req.onload = processTweets;
req.send();
```

popup.html

# Step Four

## Refactor Non-Presentation Code

```
var res = JSON.parse(req.responseText);
unreadCount += res.length;

if (unreadCount > 0) {
  chrome.browserAction.setBadgeBackgroundColor({
    color: [255, 0, 0, 255]
  });
  chrome.browserAction.setBadgeText({
    text: '' + unreadCount
  });
}

tweets = res.concat(tweets);
```

background.html

# Step Five

## Detect Successful Authorization and Fetch *Private* Data

```
// look for oauth_pin
var pin = document.getElementById('oauth_pin');

// send pin to extension
var port = chrome.extension.connect();

if (pin) {
  pin = pin.innerHTML.replace(/^\s*|\s*$/g, '');
  port.postMessage({success: true, pin: pin});
} else { port.postMessage({success: false}); }
```

content.js

# Summary

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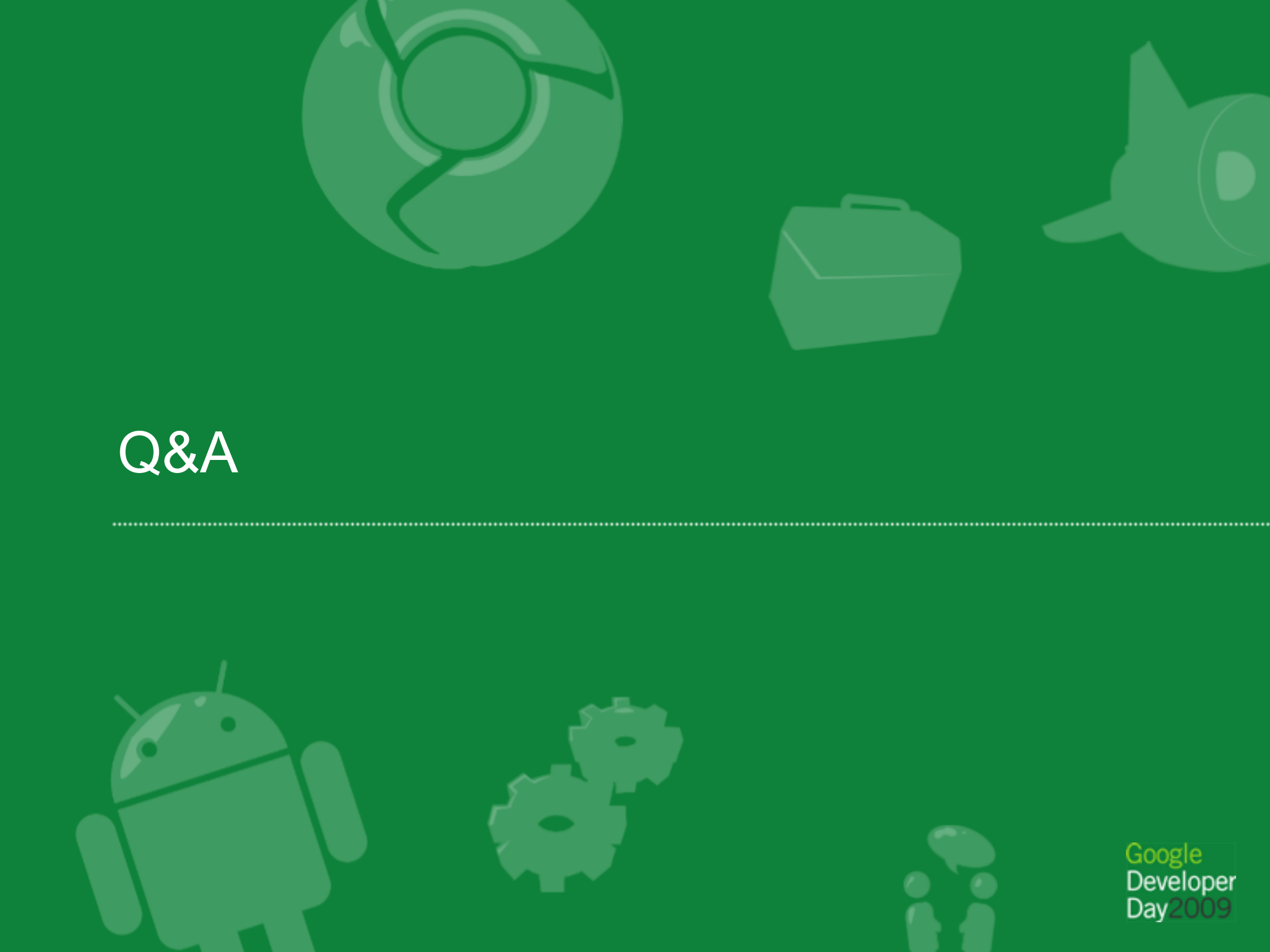
# Key Takeaways

- Small learning curve
- Over 30-million active Google Chrome users
- Upcoming GTUG and similar community events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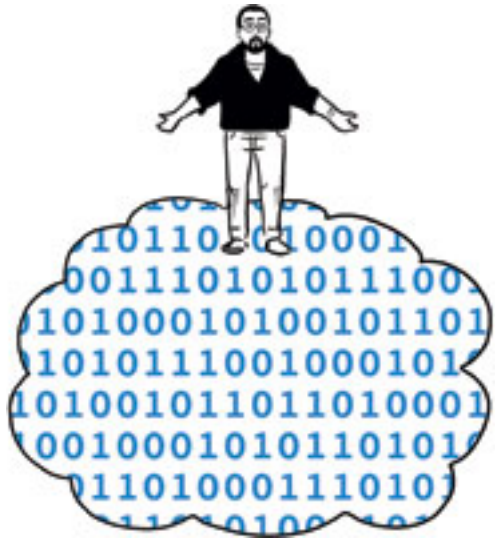
# Online Resources

- Documentation: http://code.google.com/chrome/extensions/
- Blog: http://blog.chromium.org/
- Discussion group: http://groups.google.com/group/chromium-extensions

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