Lessons from Contributing to WebKit and Blink

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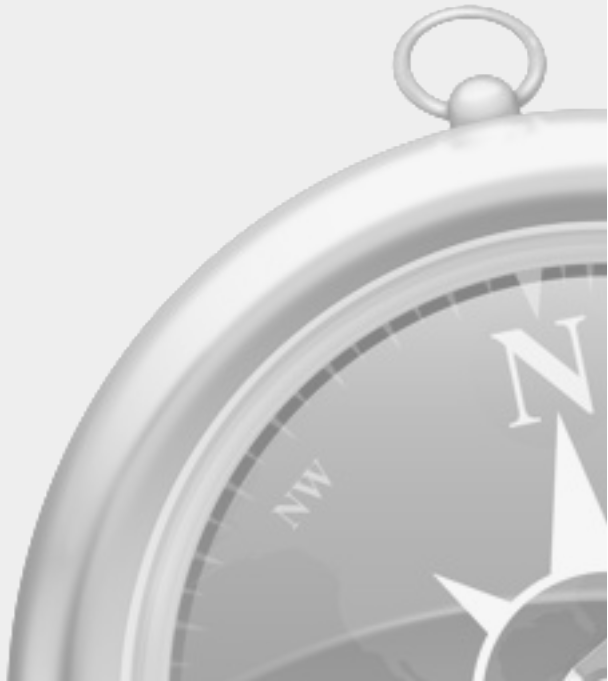
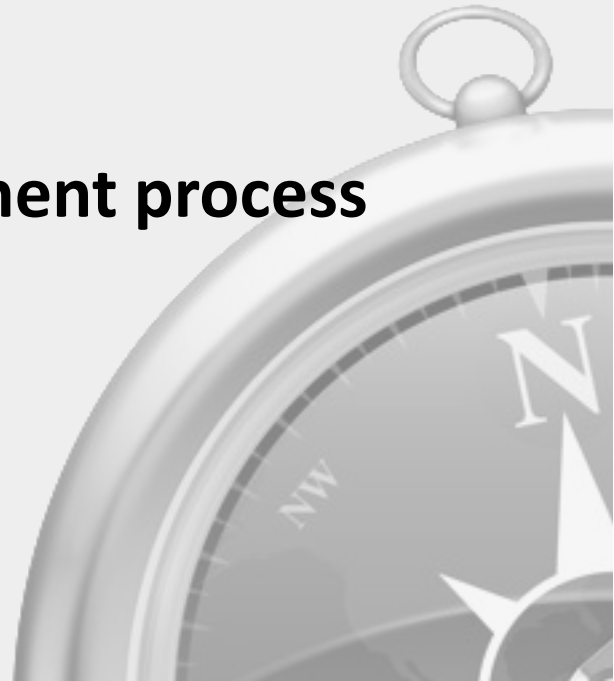


Contents



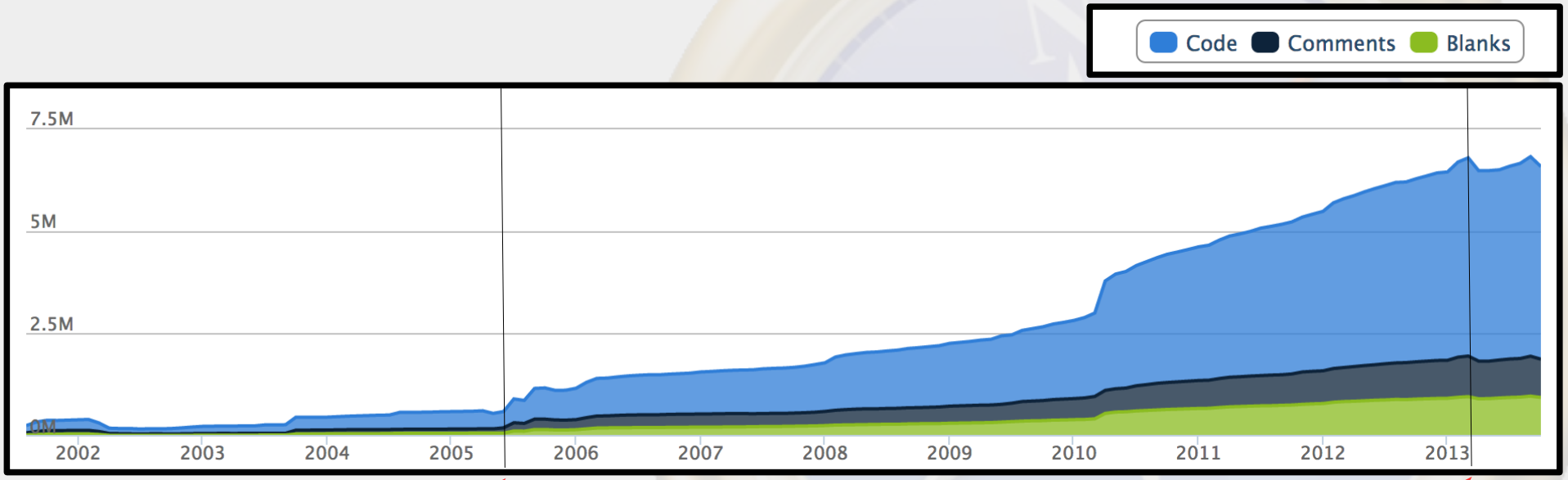
Briefing on WebKit

- **Web engine:** Used by apps to render web content
- **Open source:** Both BSD and LGPL licenses
- **Community-oriented:** Apple, Google, Intel, Samsung...
- **Multiple targets:** Desktop, Mobile, Tablets
- **Multiple ports:** Cocoa, Qt, EFL, GTK, OpenGL, Cairo

WebKit: Project Statistics

- **Started** in 2001 (fork of KHTML)
- **Open sourced** in 2005
- **4.8 million LOCs** (C++, C, Objective-C)
- **~300** committers, **~130** reviewers
- **~40%** of browsers market share (Nov '12)
  - After Blink: **~8.5%** (Safari), **~40%** (Chrome) (Sep '13)

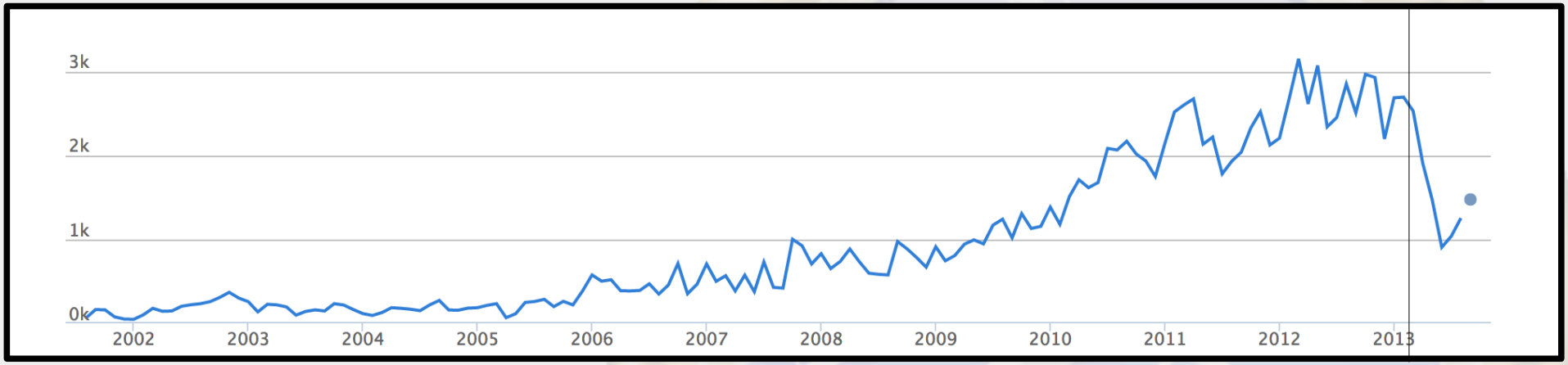
WebKit: Lines of Code



WebKit is open sourced

Blink is forked

WebKit: Commits / Month

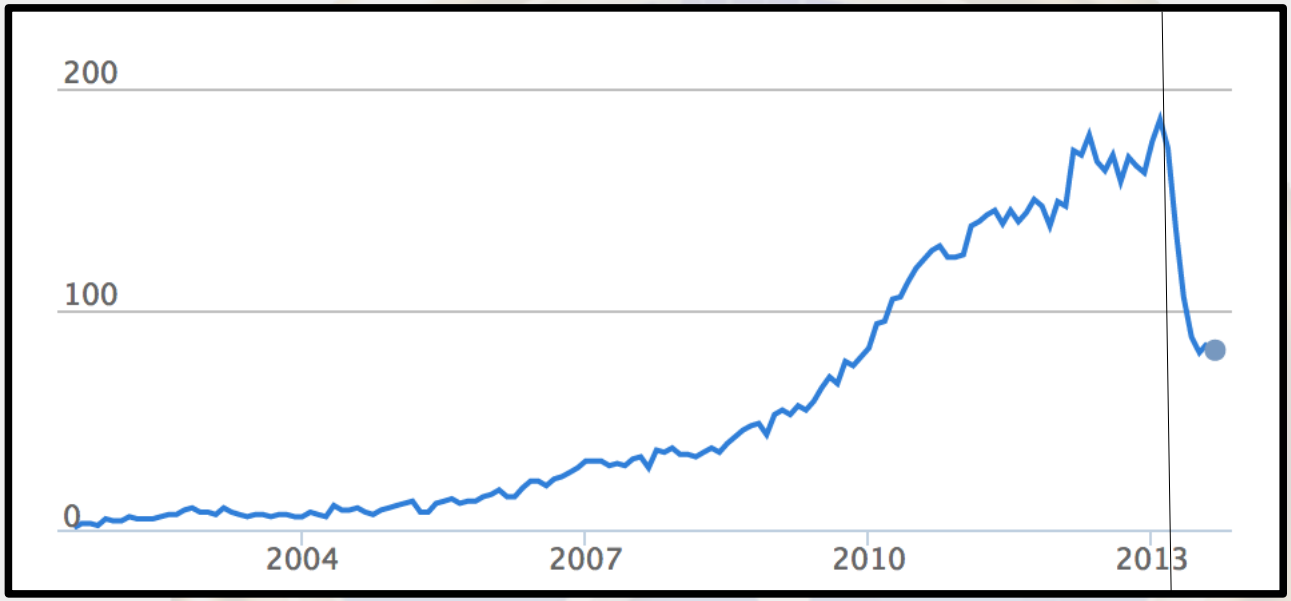


	All time	12 months	30 days
Commits	140887	23635	**1545**
Contributors	497	303	**86**

Blink is forked

WebKit: Active Contributors

Top 10 contributors
Apple
Google
Nokia
Research in Motion
Igalia
Intel
Samsung
Univ. Szeged
Adobe
Torchmobile



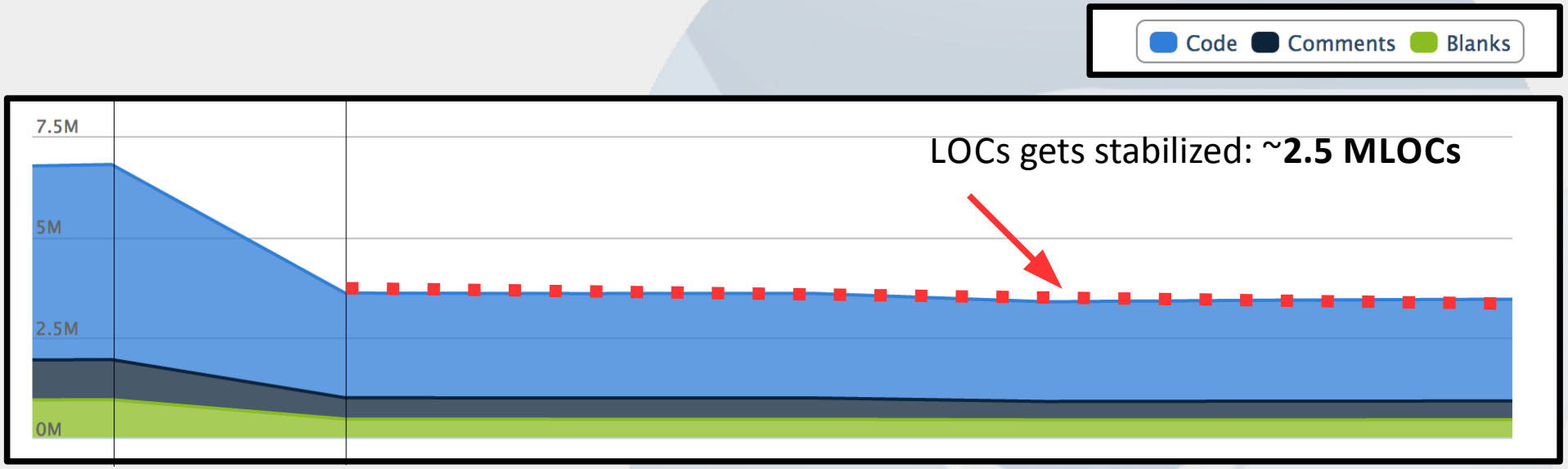
Briefing on Blink

- **Fork of WebKit** as of April 2013
- **Single port:** Chromium
  - **Not standalone**: Chromium's content layer implementation
- **JavaScript engine:** V8 (WebKit uses JavaScriptCore)
- **Multiprocess architecture:** Browser + Renderer processes
  - Differs from WebKit2 API multiprocess architecture

Blink: Different Goals

- **Greater freedom** in implementing WebCore's features
  - **Experimental features** can be enabled on runtime
- **Avoid** vendor prefixes:
  - No more `-{moz,webkit,opera}-<property>` polyfills!
- **Lighter** codebase:
  - Cleaned inherited build systems, platform and port-specific code
  - Move non-core layout and rendering code to Chromium

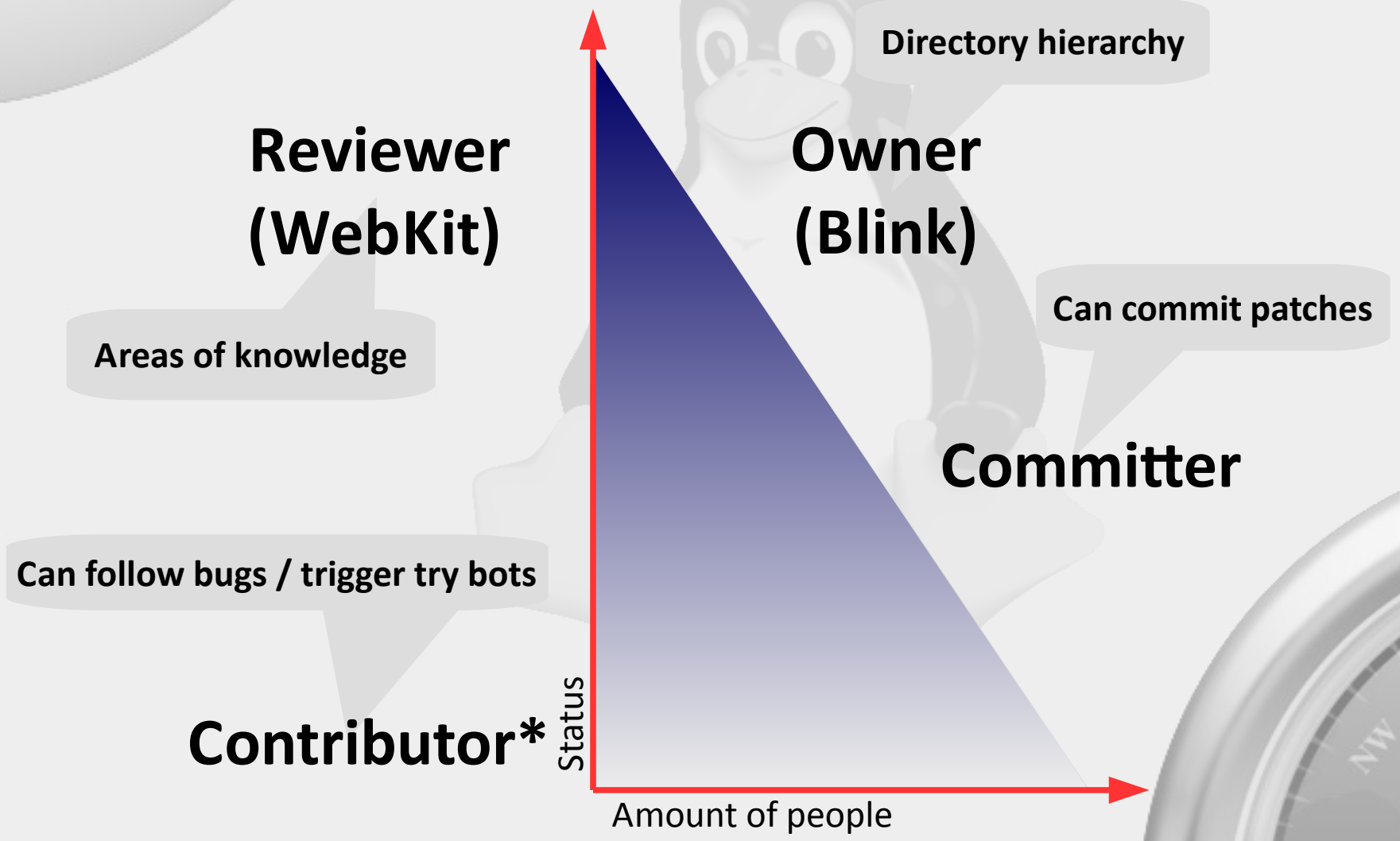
Blink: Lines of Code



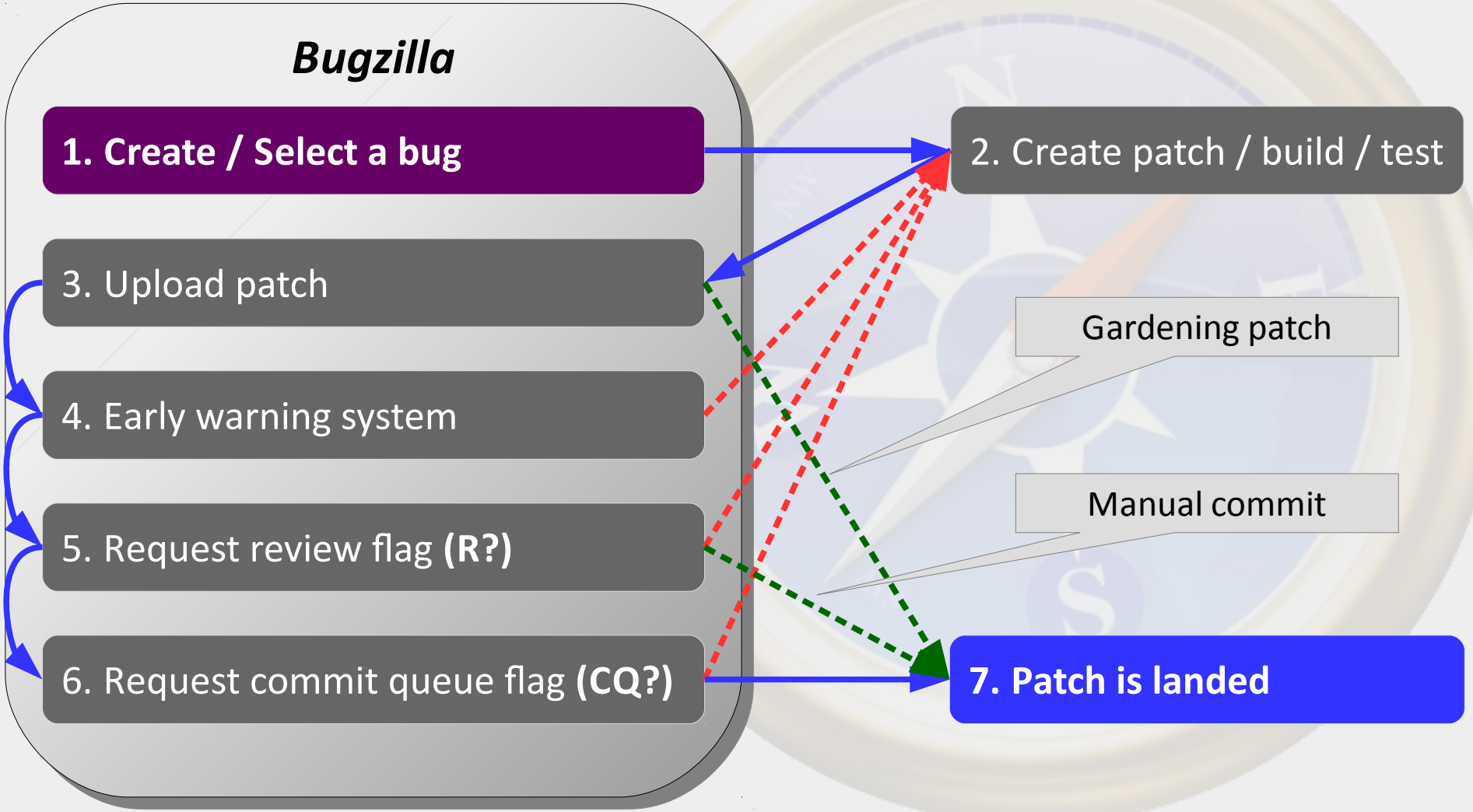
March 2013
(cleanup starts)

April 2013
(Blink is forked)

Hierarchical Map



WebKit: Submitting patches



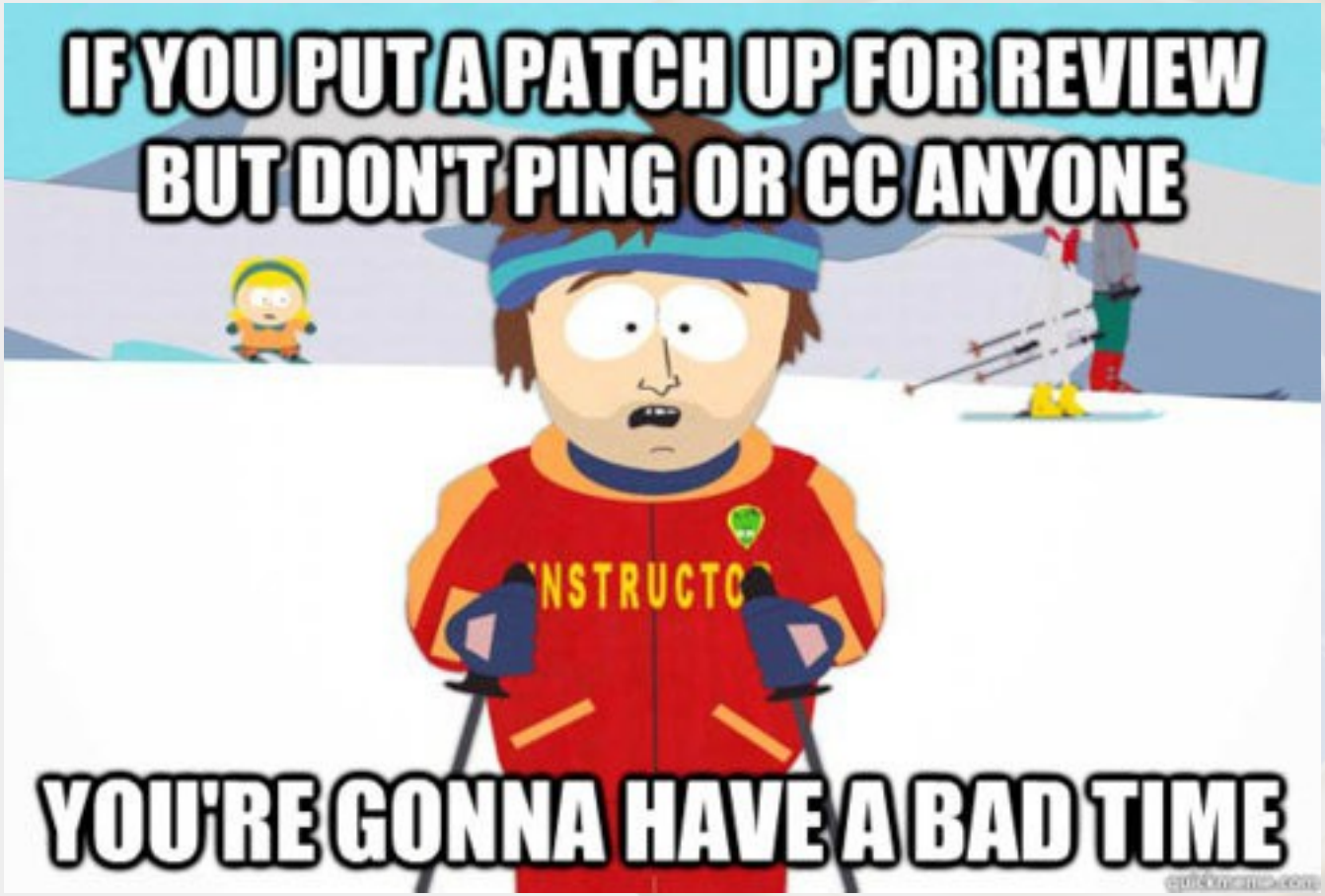
WebKit: Becoming a committer

- Have around **25 reviewed patches** landed
- Good **judgement** and **understanding of project policies**
- Good **collaboration skills**
- Nomination requires support of at least **3 reviewers**:
  - 1 to nominate, 2 to acknowledge
  - Process happens inside reviewers-only mailing list

WebKit: Becoming a reviewer

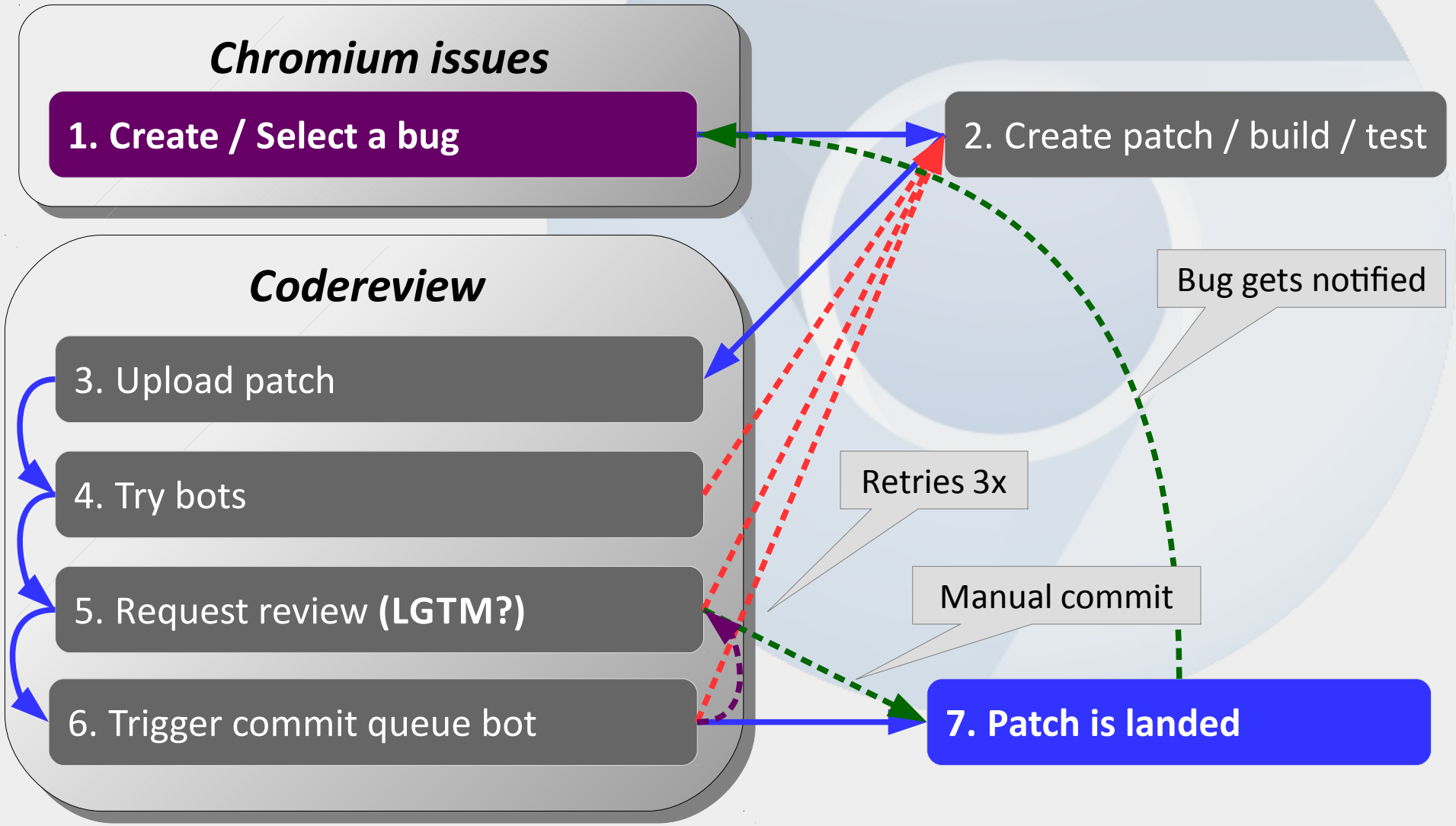
- Have around **100 reviewed patches** landed
- **Serious understanding** of the source code
- Had **informally reviewed** other patches already
- **Ensure** reviewed patches follows project policies
- **Exceptional judgement** on source code changes

WebKit: Newcomer tips



*For more memes, go to **webkitmemes.tumblr.com** :-)

Blink: Submitting patches

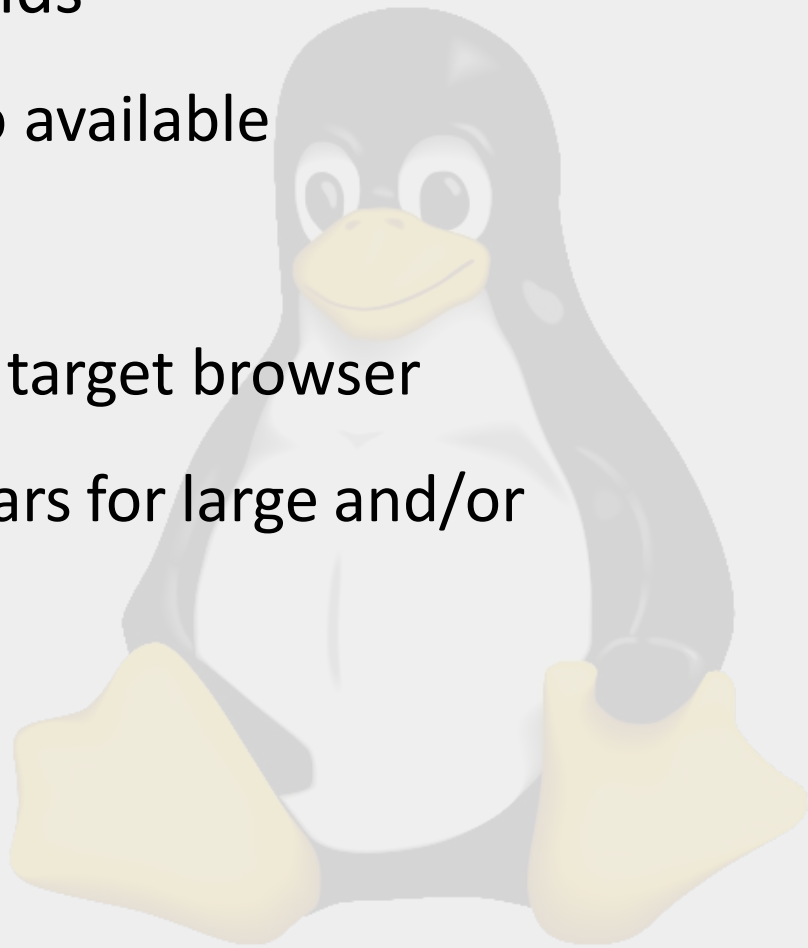


Blink: Gaining status

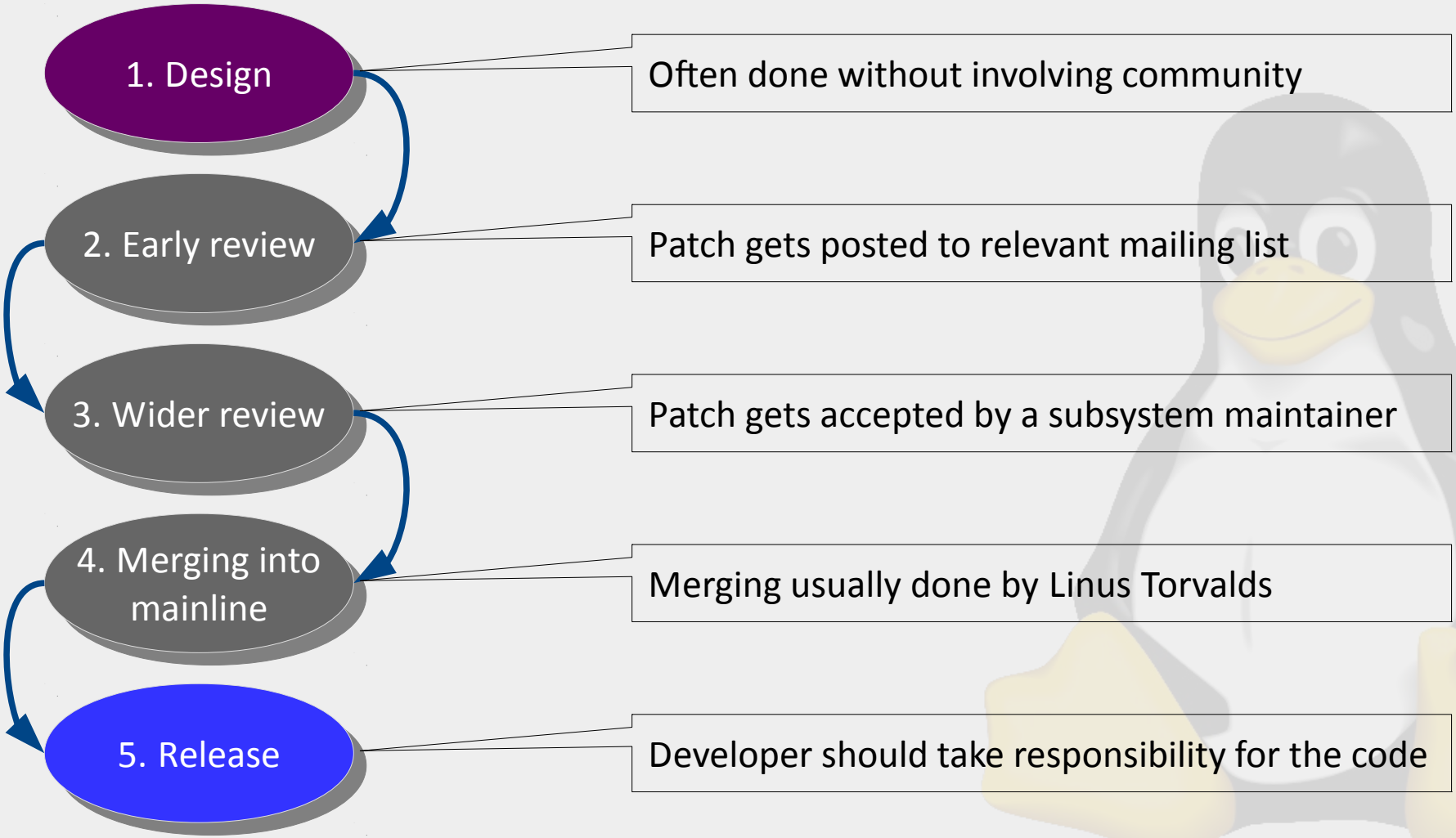
- **Committer**:
  - Follows the same criteria as WebKit
  - Can be speed up if already a WebKit committer
- **Owner**:
  - Have provided **high quality reviews / design feedback**
  - Be a **Chromium project member** for at least 6 months
  - Have submitted a substantial number of **non-trivial changes**
  - Had committed patches to the affected directory **within 90 days**
  - **Bandwidth to contribute** with other owners

Linux Kernel: Development Process

- **Vanilla** releases made by Linus Torvalds
  - **Stable** and **Experimental** releases also available
  - New releases every 2-3 months
    - **WebKit / Blink**: Version depends on target browser
- **Patch lifetime**: Quick for minor fixes, years for large and/or controversial changes
  - **WebKit / Blink**: Faster triaging times

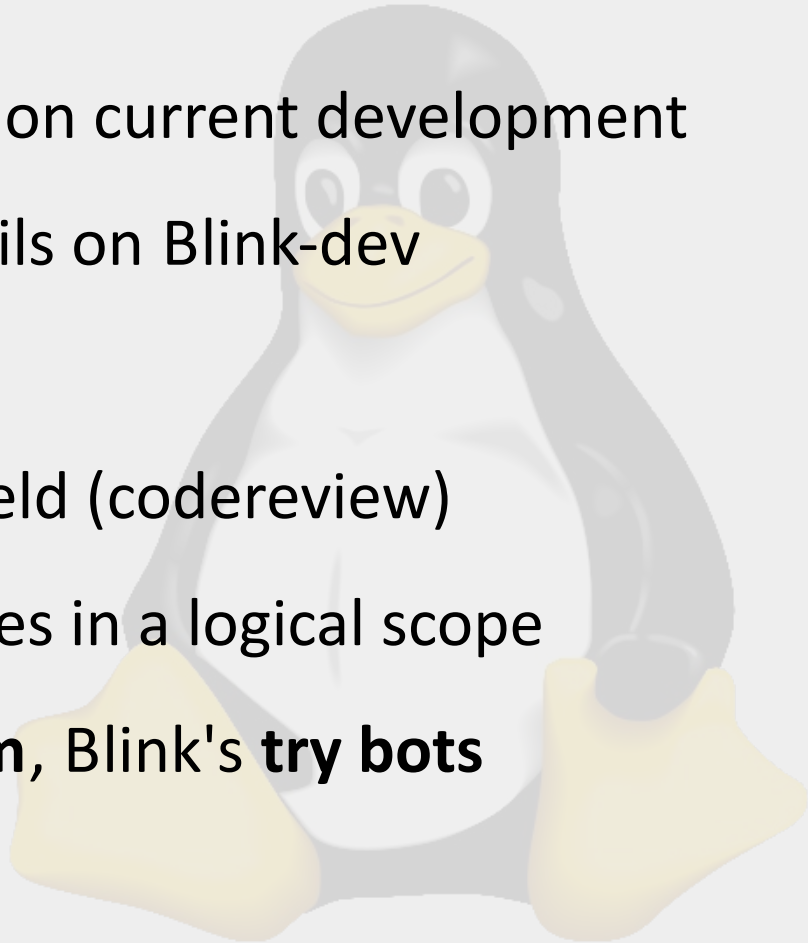


Linux Kernel: Process stages



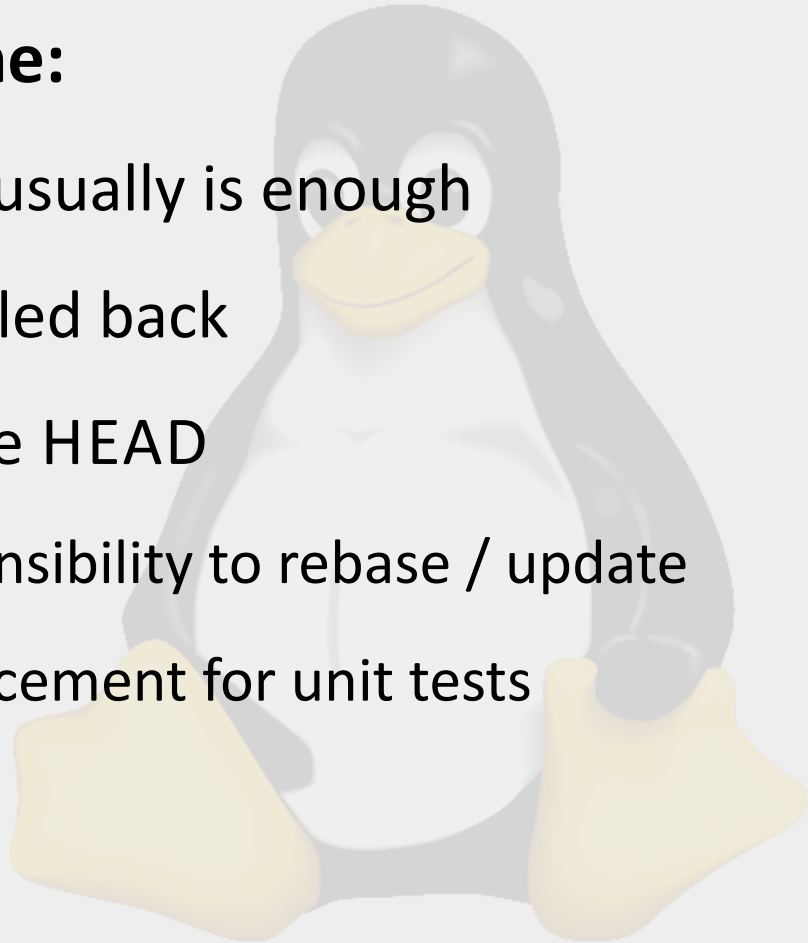
Linux Kernel: Comparisons

- **Design step:**
  - WebKit and Blink promotes openness on current development
    - i.e. “Intend to implement/ship” emails on Blink-dev
- **Early review:**
  - WebKit uses bugzilla, Blink uses Rietveld (codereview)
    - Good to track history / separate issues in a logical scope
    - **Plus**: WebKit's **Early Warning System**, Blink's **try bots**



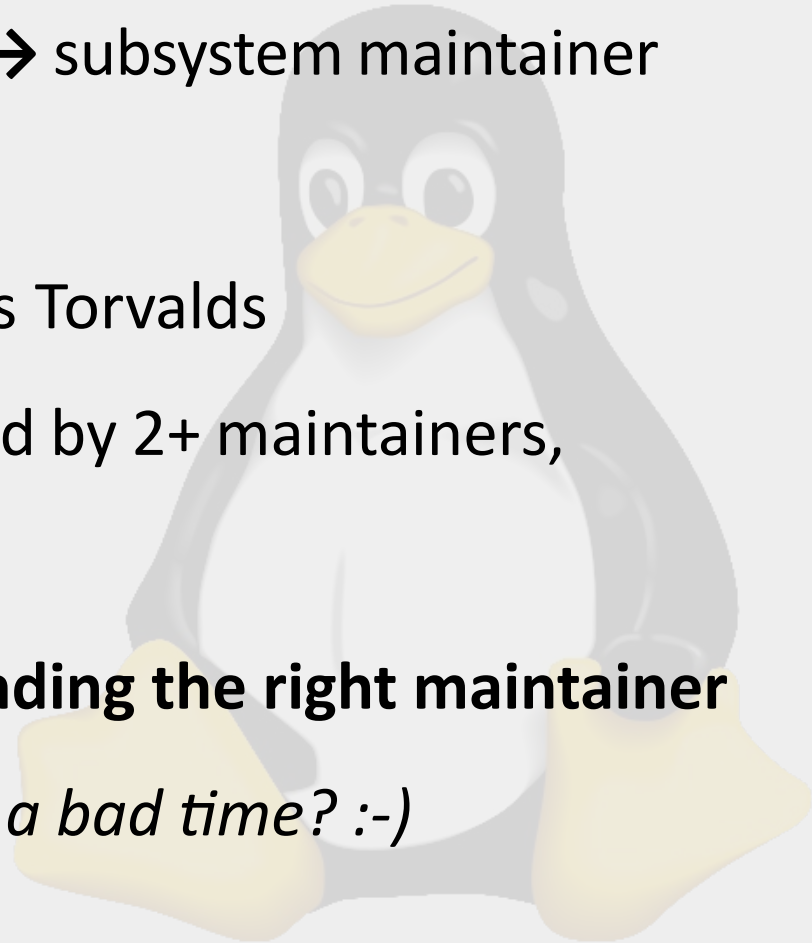
Linux Kernel: Comparisons

- **Wider review / merging into mainline:**
  - A reviewer/owner acknowledgement usually is enough
    - In the worst case, patches can be rolled back
  - **Integration**: EWS/Try bots always have HEAD
    - If the patch fails, developer takes responsibility to rebase / update
    - **Testing on the fly**: Layout tests as replacement for unit tests



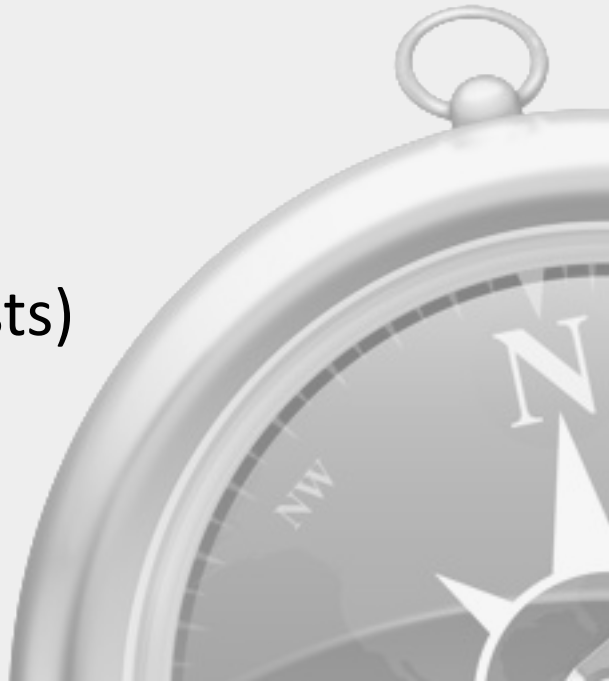
Linux Kernel: Comparisons

- **Hierarchy model:**
  - Developer → {driver, sub} maintainer→ subsystem maintainer → Linus Torvalds
  - Developer → Andrew Morton → Linus Torvalds
  - If a patch touches 2+ places maintained by 2+ maintainers, “Acked-by” enters in scene
  - **Getting patches inside depends on finding the right maintainer**
    - *Remember WebKit meme on having a bad time? :-)*

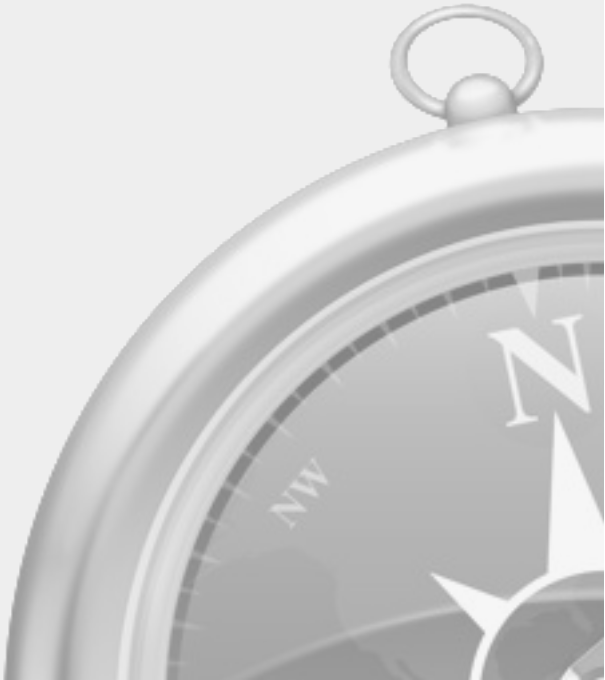


Final thoughts

- **WebKit, Blink and Linux Kernel projects are:**
  - Open source, community-oriented projects
  - Strict in terms of development processes
  - Meritocracy-based hierarchy levels
- **WebKit and Blink awesomeness:**
  - Automatized patch triage system (including tests)
  - Bug tracking system / history (web tools)



Questions? :-)



Thank you.

References:
ohloh.net – charts, statistics
linuxfoundation.org – Linux Kernel development steps
webkit.org | chromium.org/blink – general information
bitergia.com – top contributing companies

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