

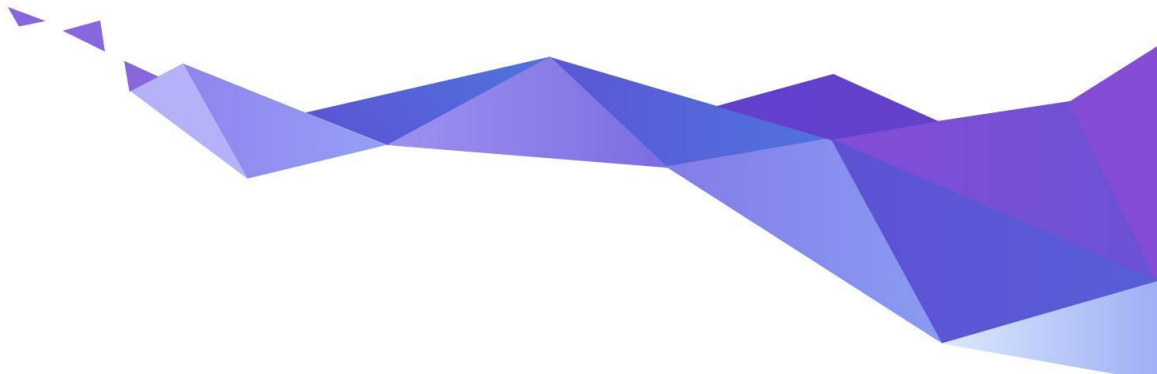
Zephyr Documentation BoF

ZDS 2023

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Zephyr Documentation Survey



tinyurl.com/zephyr-docsurvey23

Documentation Survey May-June 2023



- 85+ respondents since May 26
- Promoted through Discord/social media/blogs
 - ⚠️ Probably biased towards a certain crowd

What it surveyed

- What's your role, experience level with embedded development, and with Zephyr in particular?
- What do you like / dislike in the Zephyr documentation?
- What do you feel is missing?
- How do you consume / search for information?

Common Themes

- Search
 - Related: “discoverability” (of boards, samples, bindings, ...)
- Navigation
- Comprehensive samples/tutorials
- How-to's / Best practices
- PDF?
- Localization?

The good



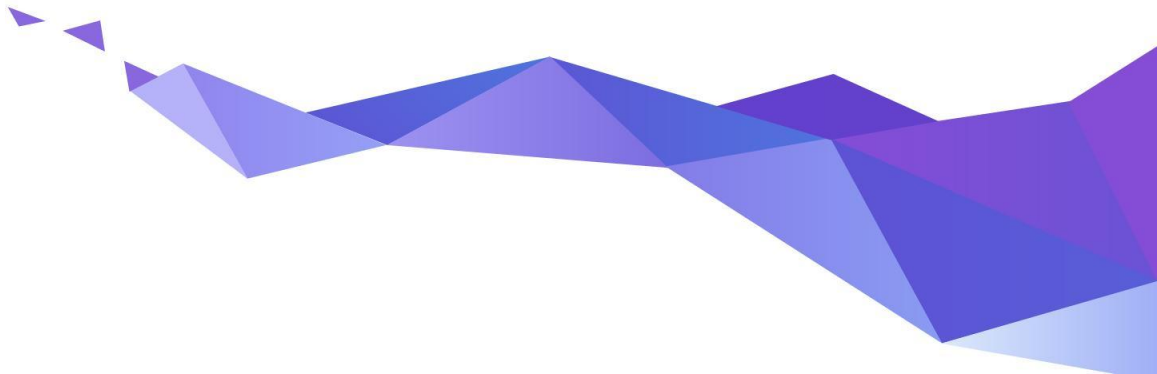
- Up-to-date
- Extensive
- Honest
- Lives with the code
- Lots of “human-written” helpful architecture bits
- Samples

Top pain points

- Searching from Google is broken
 - Site search is kinda broken too (for some people)
- Need more tutorials / best practices / detailed how-to's
- Some boards are better documented than others
- For contributors
 - Building doc locally is not well documented and slow
 - Diagrams are not editable

Doc infra improvements

DONE... and TODO



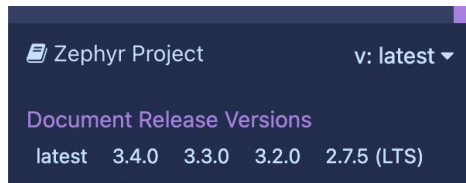
Google Search experience



"When you enter the documentation from a Google search, you often end up in an older version of the documentation."

Situation should be much better now!

- Updated robots.txt
- Explicitly asked Google to remove old URLs
- Cleaned up nav menu to only list supported versions



Google Search experience

☒ Total clicks

105K

+/-latest/

72.1K

-/latest/

☒ Total impressions

1.62M

+/-latest/

1.12M

-/latest/

☐ Average CTR

6.5%

+/-latest/

6.5%

-/latest/

☐ Average position

14.6

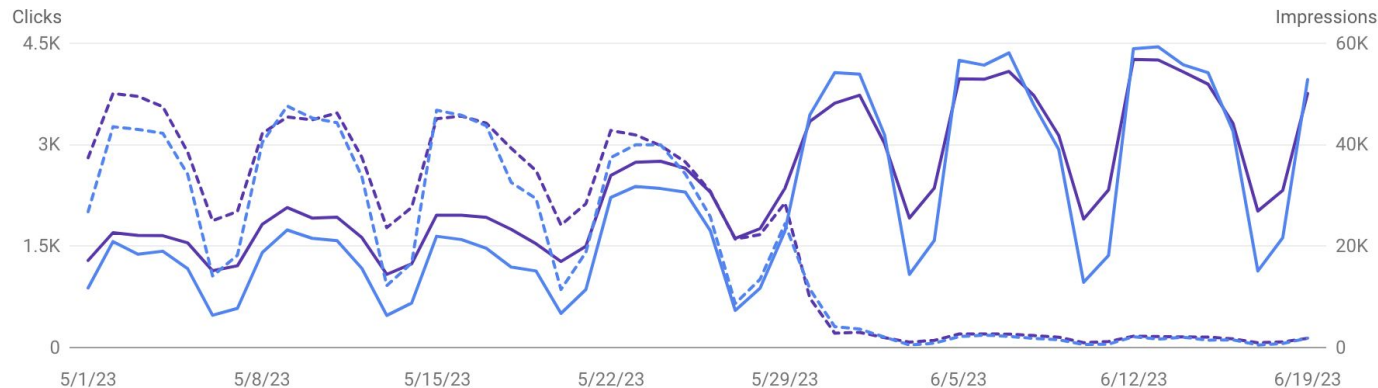
+/-latest/

17.9

-/latest/



Chart totals and table results might be partial when filters are applied. [Learn more](#)



Theme modernization?

- Looking at [Sphinx Immaterial](#) **theme**
 - Adaptation of the popular mkd docs-material theme
 - Modern & Responsive
 - Integration with [Mermaid.js](#)
 - Improved search

Making diagrams editable?

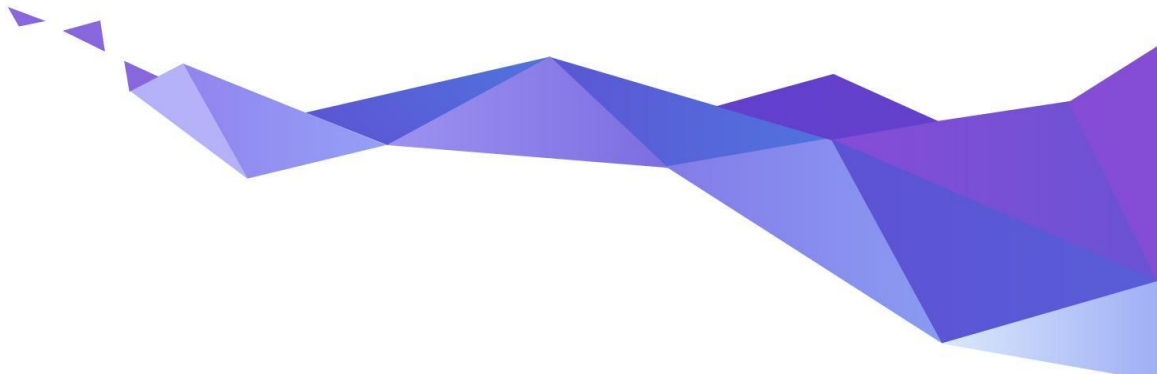
- Embracing **Mermaid.js**
 - Quick demo
 - What would be the impact for e.g. PDF generation?

Performance improvements

PR #59570: Switch from 'breathe' to 'docleaf' for API documentation generation

PR #55708: add minimal sphinx tag that turns off very slow features

Quick look at web analytics



Most searched terms

- May 2023
 - 218K visits
 - 30.6K internal searches

Label	Searches
thread	141
timer	130
uart	129
gpio	126
i2c	116
west	116
kconfig	111
mcuboot	107
logging	102
device tree	94
qemu	88
bluetooth	86
sleep	85
spi	85
devicetree	83
esp32	83
k_thread_create	82
shell	82
SYS_INIT	77



Most viewed boards - May 2023



/latest/boards/arm/rpi_pico/doc/index.html

</latest/boards/xtensa/esp32/doc/index.html>

/latest/boards/arm/nrf52840dk_nrf52840/doc/index.html

/latest/boards/riscv/esp32c3_devkitm/doc/index.html

/latest/boards/arm/nrf52840dongle_nrf52840/doc/index.html

/latest/boards/xtensa/esp32_ethernet_kit/doc/index.html

/latest/boards/posix/native_posix/doc/index.html

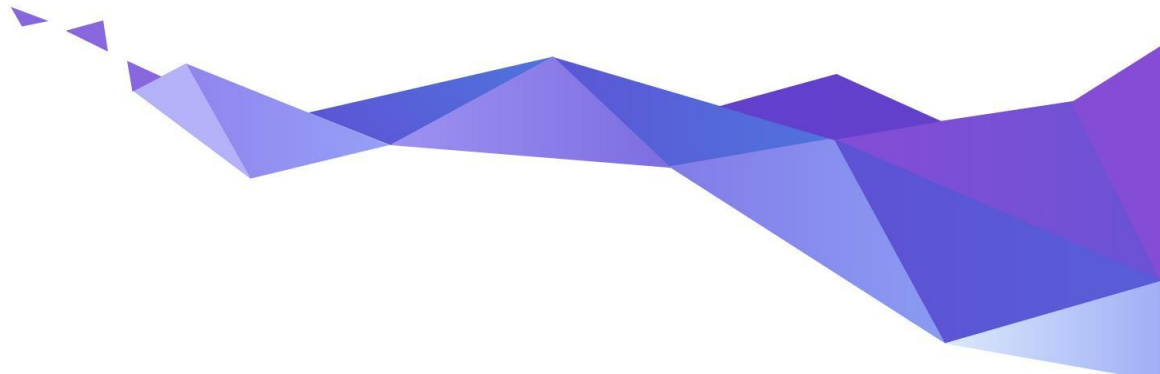
/latest/boards/xtensa/esp32s3_devkitm/doc/index.html

/latest/boards/x86/qemu_x86/doc/index.html

/latest/boards/arm/nrf52dk_nrf52832/doc/index.html

* this is for folks landing directly on a board doc page, not when using internal search

Navigability / Discoverability



Navigability / Discoverability

“For some high level pages like PWM, I would recommend there be links out to active samples for that capability.

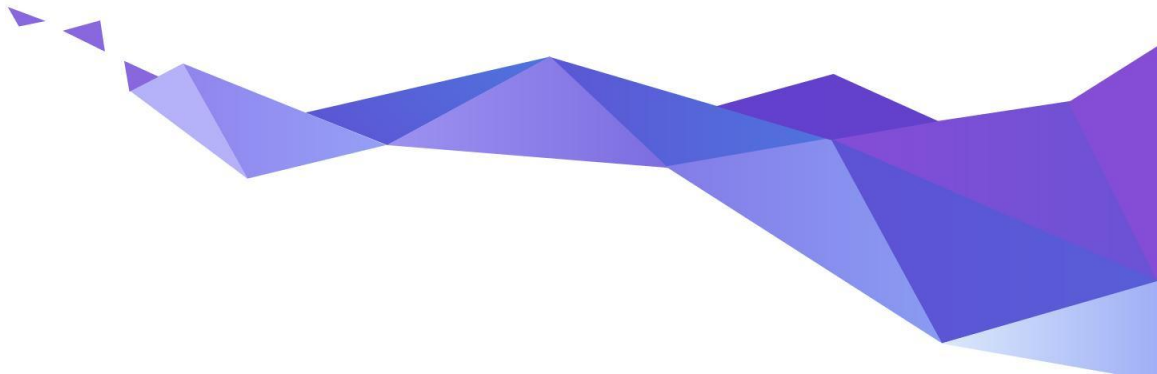
[...]

While the API reference is important, as a developer, I'm really just looking to copy code (full honesty here). Page in question: <https://docs.zephyrproject.org/latest/hardware/peripherals/pwm.html>”

Internal search

- Improve Sphinx index?
 - See e.g. Sphinx Immaterial (➡ demo)
 - Lunr.js?
- Use server-side index?
 - If yes, how about hosting?
- Google Programmable Search?
 - Should we add this?

Getting inspiration from others?



Supported Boards

RIOT has a hardware abstraction layer, which enables us to support many boards easily.

ACD52832

Acmesystems YARM board

Adafruit Clue

Adafruit Feather Mo

Adafruit Feather Mo LoRa

Adafruit Feather Mo WiFi

Adafruit Feather nRF52840
Express

Adafruit PyBadge

Adafruit-Itsybitsy-M4

Adafruit-Itsybitsy-nRF52

Airfy Beacon

AlienTek Pandora



Wio Terminal



ATSAMD5XX19
System on Chip

Other
Vendor

Software

Hardware

Peripherals

Components



ATSAMD5XX19
atsamd5xx19



Device tree



Device tree
Hierarchical device data structure

Specification

Frequency: 120 MHz

Flash: 512 KiB

RAM: 192 KiB

<https://zephyr-dashboard.renode.io/>

Good tutorials out there?

- https://arm-software.github.io/CMSIS_5/RTOS2/html/rtos2_tutorial.html
- FreeRTOS fundamentals
- ...

Common Themes

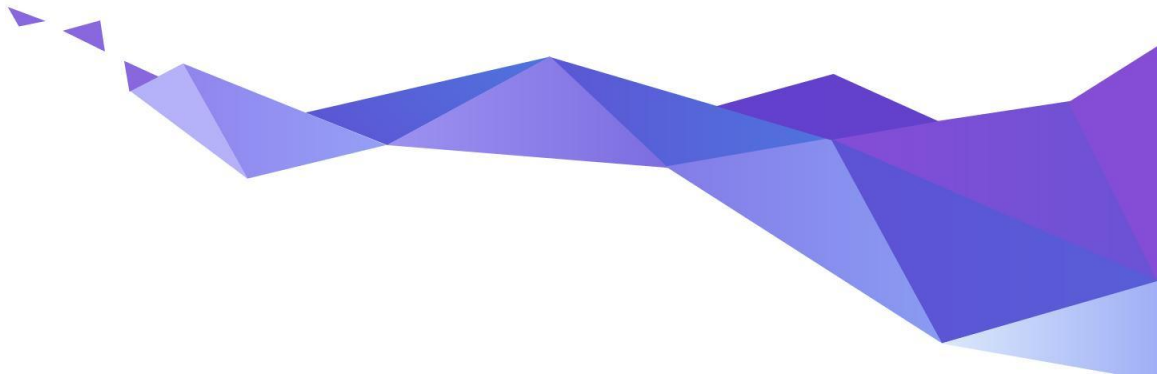
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Zephyr Documentation Survey



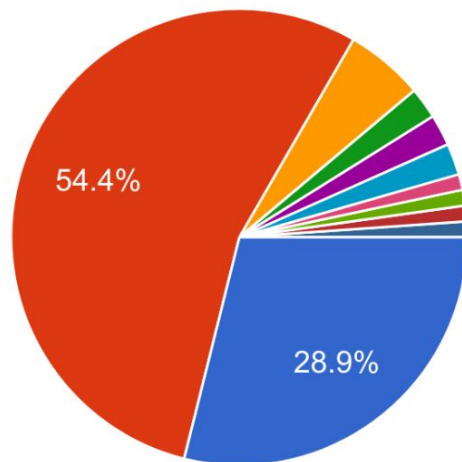
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BACKUP



What best describes your role?

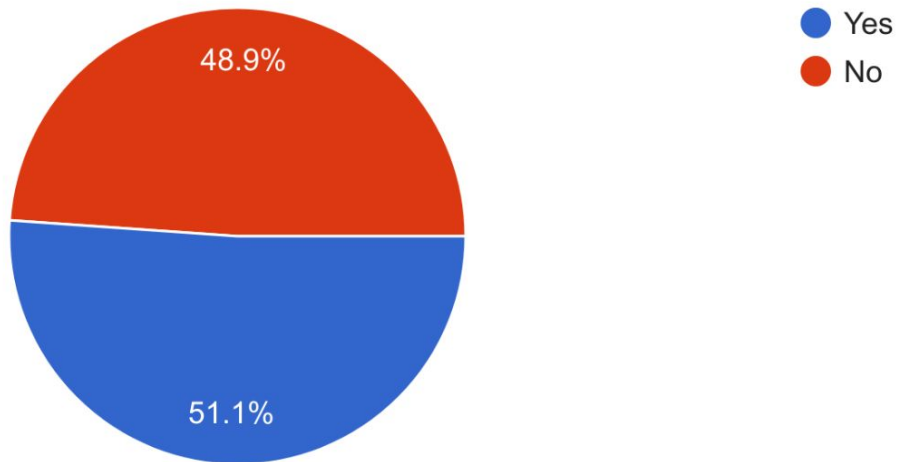
90 responses



- Firmware Engineer
- Embedded Software Developer
- Full-stack developer
- Product Manager
- Hobbyist
- Software Architect
- Embedded hard and firmware develop...
- Hardware Architect

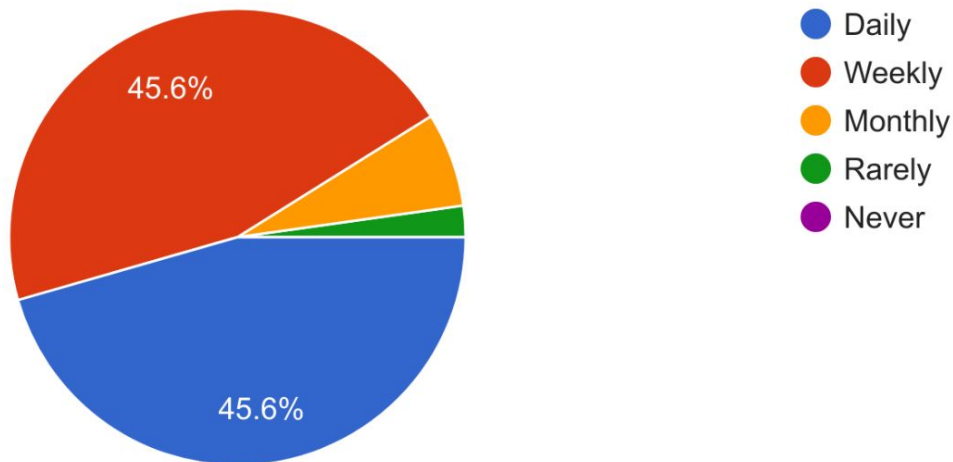
Are you shipping a product built on/using Zephyr?

90 responses



How often do you refer to the Zephyr RTOS technical documentation?

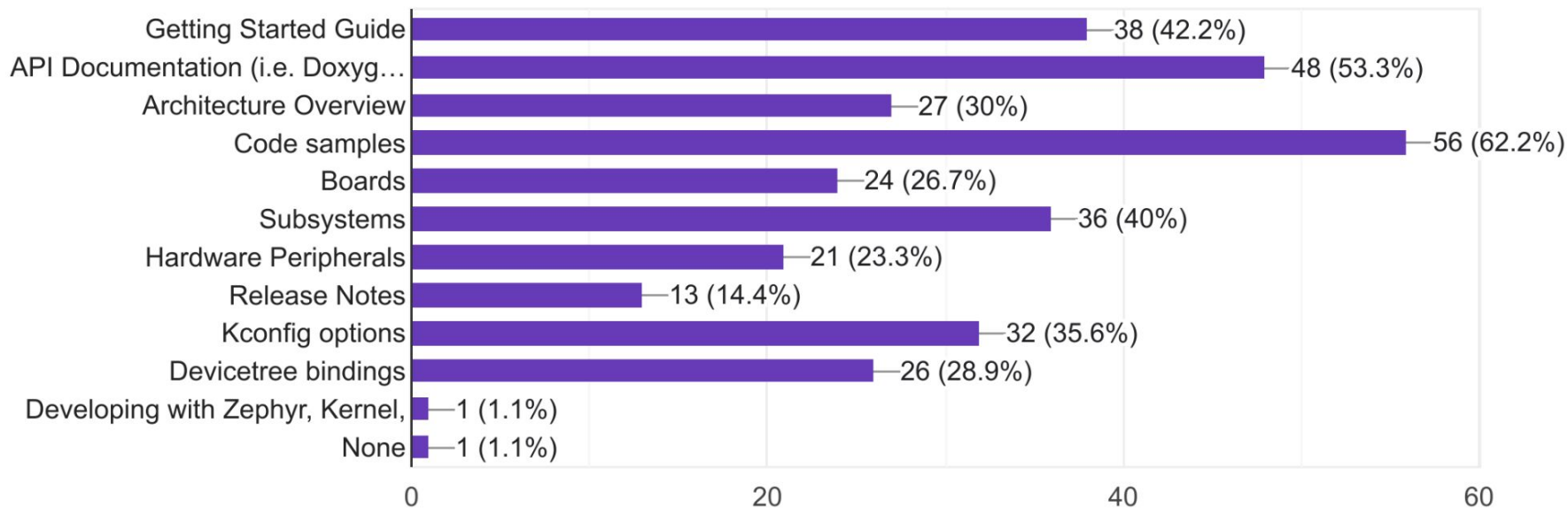
90 responses





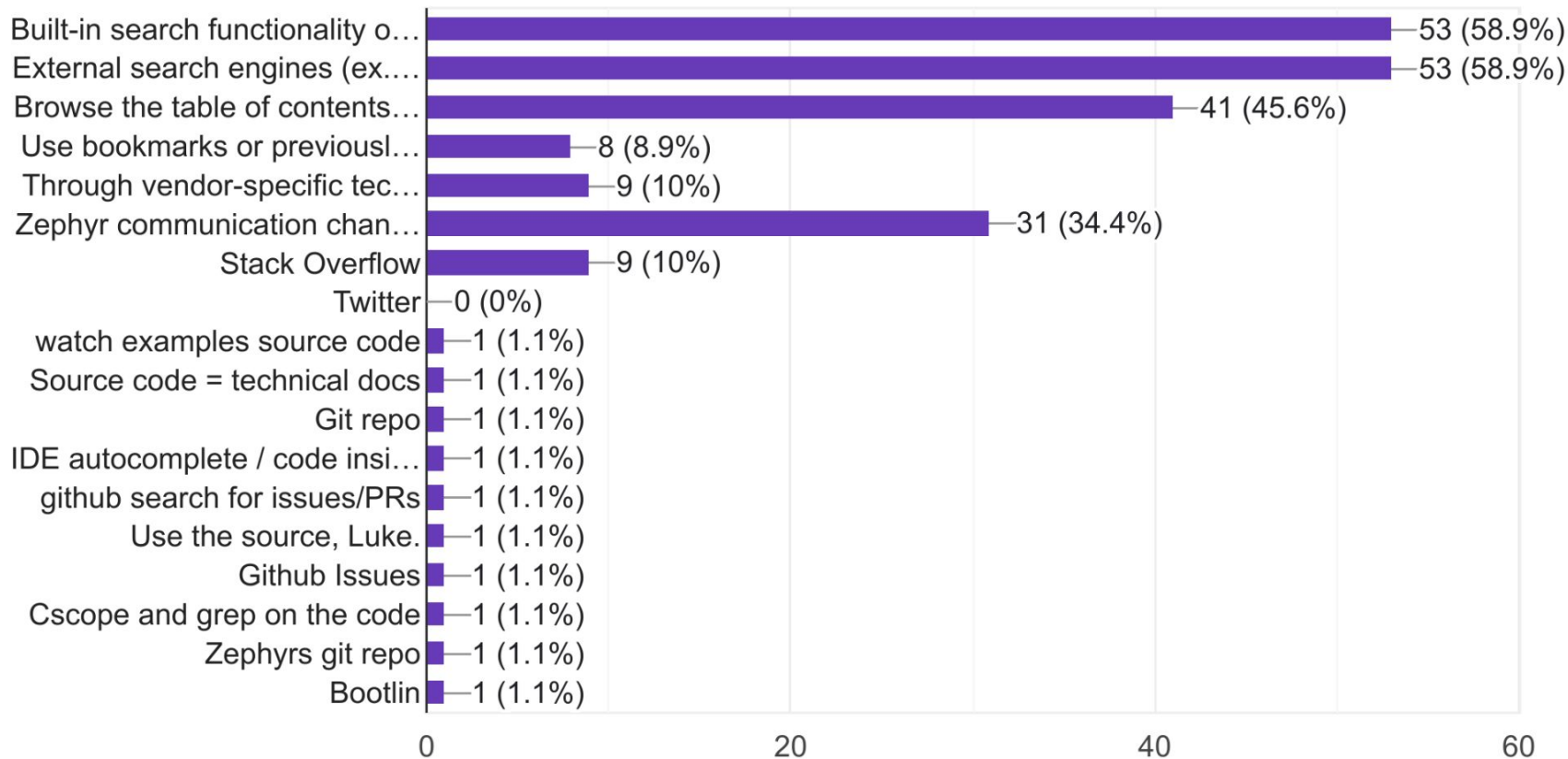
Which sections of the Zephyr RTOS technical documentation do you find most useful?

90 responses



How do you typically search for information related to Zephyr RTOS?

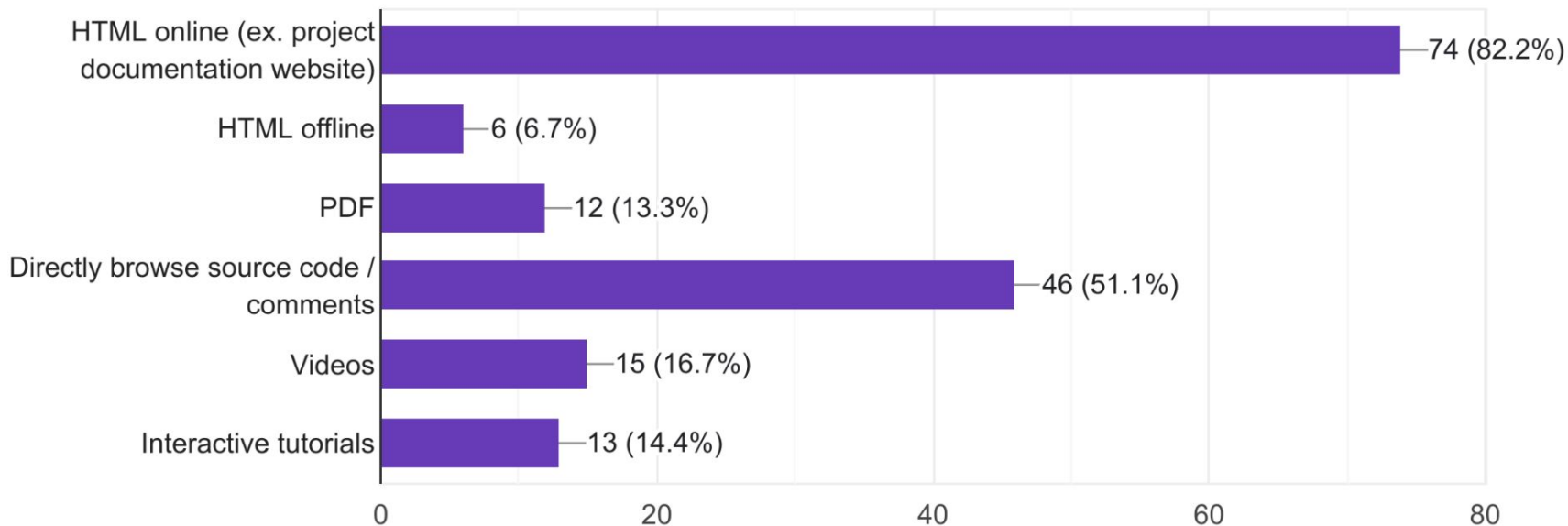
90 responses





How do you prefer to consume technical documentation for projects similar to Zephyr RTOS? (including commercial products)

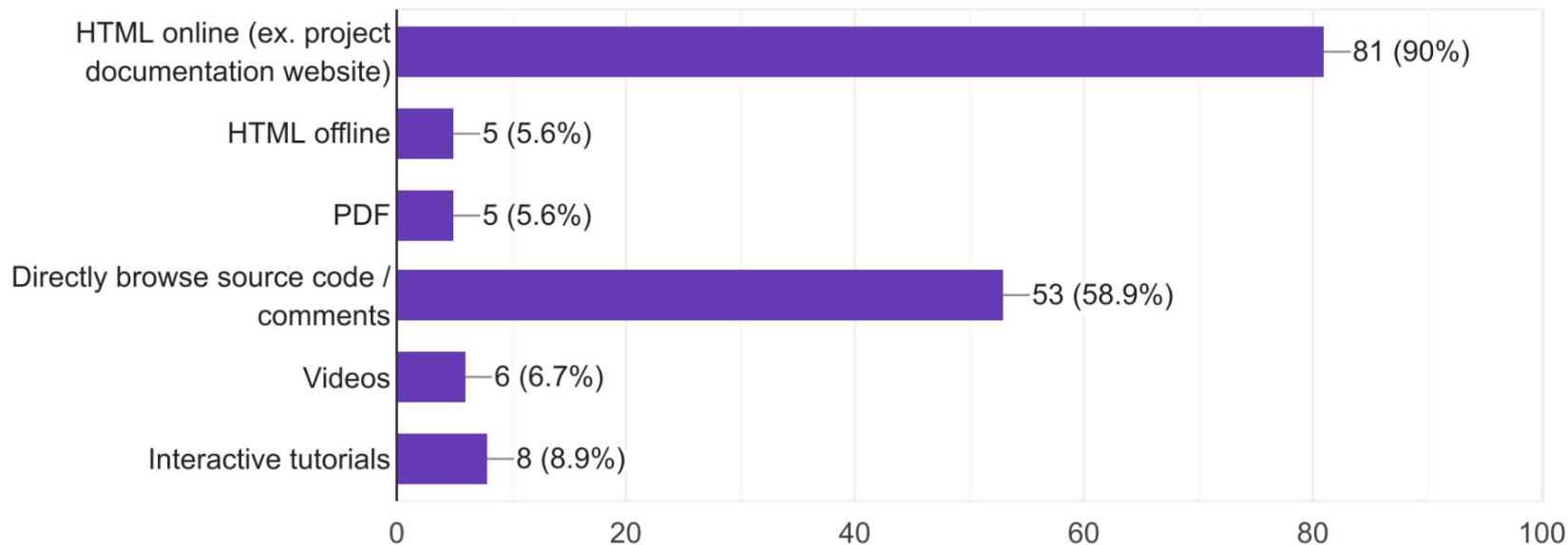
90 responses





And for Zephyr RTOS specifically, how do you typically consume technical documentation?

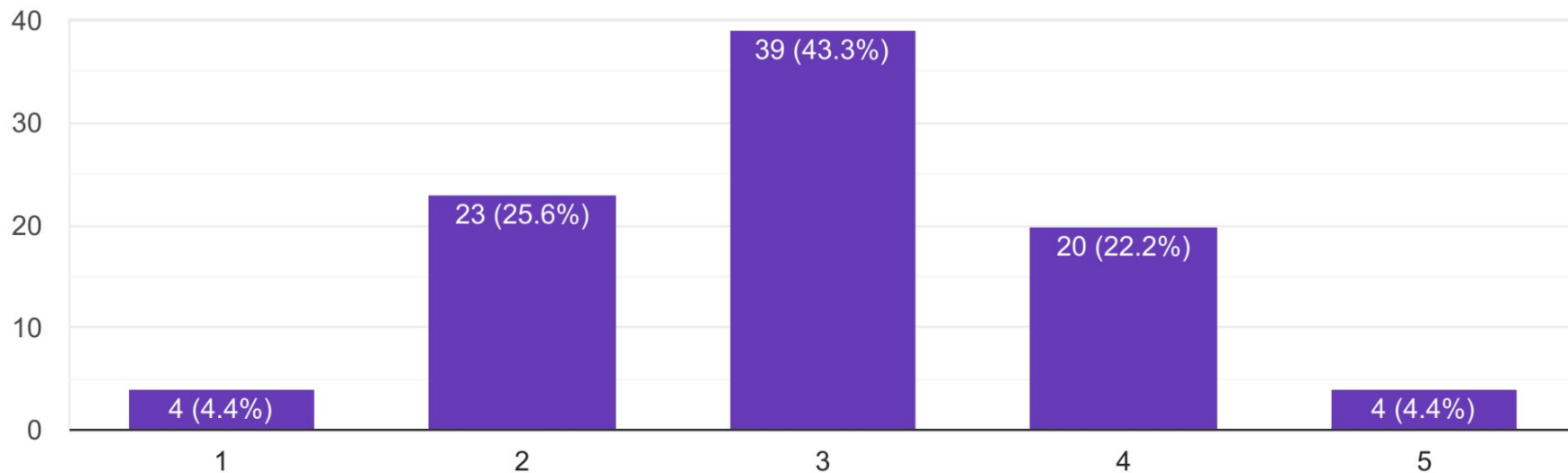
90 responses





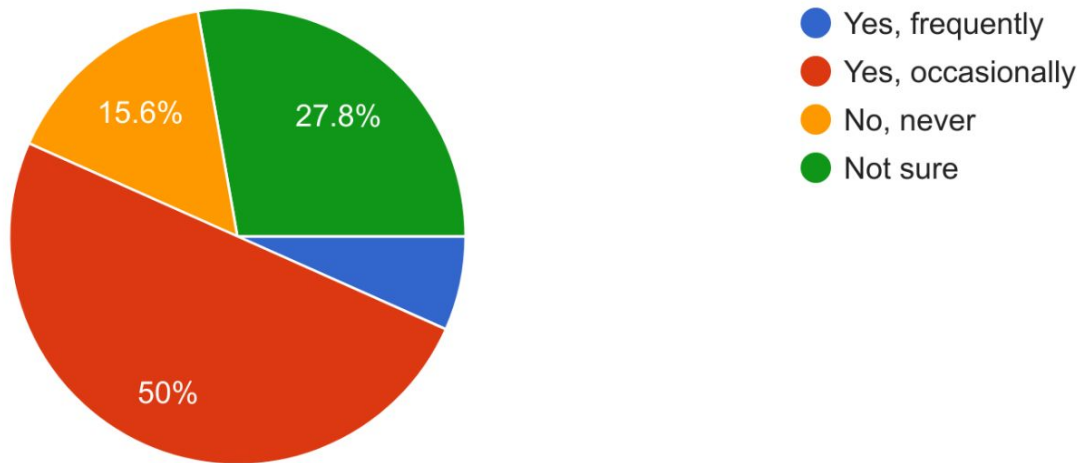
How easy would you say it is to find the information you need in the Zephyr RTOS technical documentation?

90 responses



Have you ever encountered outdated or inaccurate information in the Zephyr RTOS technical documentation?

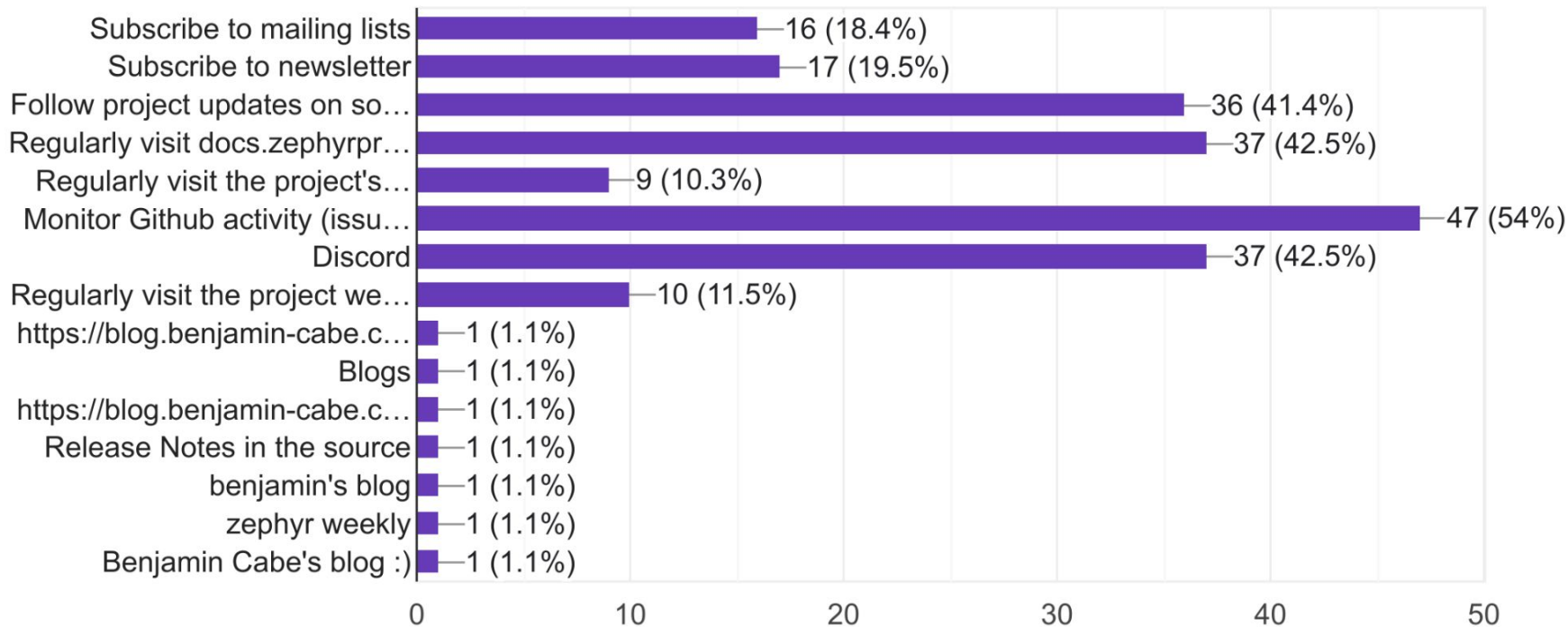
90 responses



How do you stay up-to-date with changes or updates to the Zephyr RTOS technical documentation?

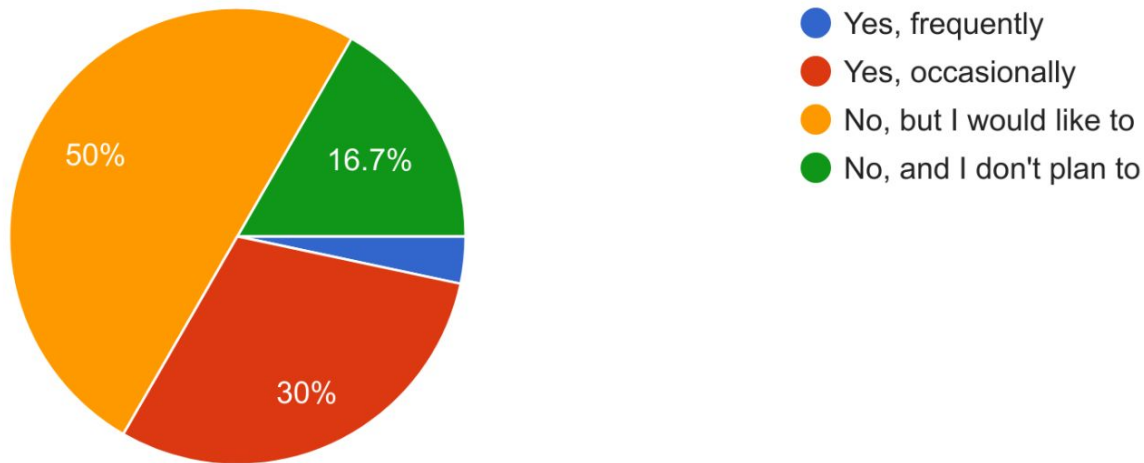


87 responses



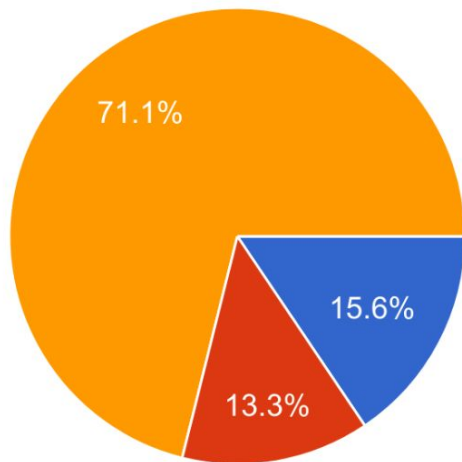
Have you personally contributed to the Zephyr RTOS technical documentation, either by submitting changes or providing feedback?

90 responses



Are you or your company extending or re-packaging the Zephyr RTOS technical documentation for your own product or internal use? (ex. integration w...ur own info-center, custom table of contents, etc.)

90 responses



- Yes
- No, but we are considering it
- No, and we have no plans to do so