

SWOT Analysis Output

SWOT Analysis - Why/How/What

- A SWOT is a great input into any strategic planning activity. Conducting a SWOT as an open source community brings the added advantage of directly including developers, users, and other stakeholders in the process, which increases input quality and efficiency
- ~30 DevSummit participants representing a cross-section of the FreeBSD Community worked in groups of 5-8 and listed FreeBSD's key Strengths, Weaknesses, Opportunities, and Threats, as a technology and community
- The following slides represent the group's perspective and provide some questions about how the project can use this insight to formulate some plans

About SWOT Analysis

- **Strengths and Weaknesses are the internal perspective. They are the things that we can control**
 - Strengths are a source of competitive advantage, they are why an individual or organization chooses to use FreeBSD or why developers choose to join the community
 - Weaknesses can be thought of as “Areas for Improvement” where the project needs to get better
- **Opportunities and Threats are the external perspective - they represent things happening in the market beyond our direct control**
 - Opportunities are places where FreeBSD can grow - we use opportunities to establish our growth objectives
 - Threats are things happening in the market that put the project, or one of our objectives, at risk

Strengths

- Permissive license
- Complete system, tight kernel/userland integration
 - build/test hw drivers in userspace and flip switch to kernel space
 - brings benefit of allowing developers to contribute anywhere
- Community-based governance, no BDFL
- High code quality and reliability
- Stable, progressive improvement that represents balance between technical excellence and pragmatism
- Accepting of external contributions / No NIH syndrome
- ZFS integration
- Good documentation
- Observability of Jails (Dtrace, etc)
- Easy to install on bare metal
- Enduring: 30-year track record & FreeBSD Foundation
- Healthy and efficient interaction around the code - lots of experts in the community
- Long-term community member retention
- Great for research
- Secure by design
- Standards compliant

Weaknesses

- | | |
|---|---|
| <ul style="list-style-type: none">• High barrier to entry to contribute, exacerbated by poor communications• Slow to adapt to new trends/comfortable with what works• Limited HW support, especially GPU• High barrier to entry for desktop/casual users• Inconsistent review process• Poor support for WIFI, graphics, and non-core systems• No support for containers/orchestration• Not enough developers / insufficient pipeline of new contributors/committers• Lack of transparency• Limited promotion of all the innovation in FreeBSD• Many things require customization• Tooling: too many that are not integrated enough, no G on PRs• Outdated website• Support spread across too many branches | <ul style="list-style-type: none">• Subpar build system, outdated dev model (e.g. late to CI), inferior kernel analysis tools• Regressions• No pkg'd base for upgrade testing• Missing / outdated docs• No web UI for bhyve, and other systems• Packages often break on current• Lack of diversity in community• Limited commercial support• Can be hard to find very competent people to help• Incomplete namespace separation• 1 18 N• Hubris/abrasive culture• Lack of focus can result in failure to accept PRs• Too unopinionated (e.g. 3 firewalls)• Too much friction in the developer workflow• Non-standard/edge case deployments encounter too many problems |
|---|---|

Opportunities

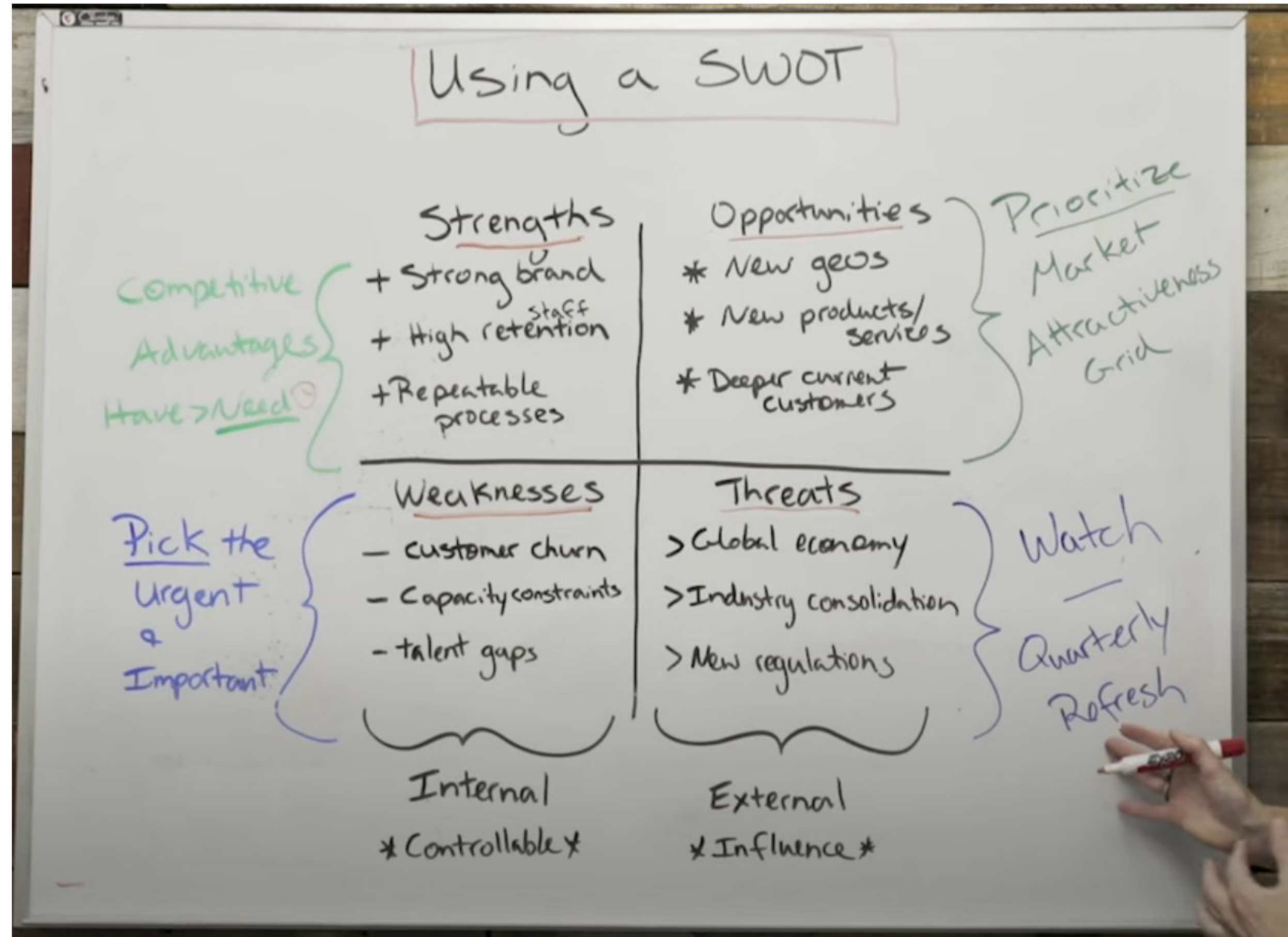
- Cloud and serverless growth and FreeBSD compatibility thanks in part to Colin
- Hyper-focus globally on security and secure by design - FBSD well-positioned to be the default system on CHERI
- RISC-V is the next big architectural movement and FreeBSD runs best
- Movement to Arm64/Ampere for efficient performance, and FreeBSD runs great here
- Appliance vendors still concerned abt the GPL and FreeBSD is the clear choice
- Exploding demand for throughput at every layer of the stack - ZFS on FreeBSD has a significant performance advantage that we can use to gain share
- IPV6 growth represents an opportunity for FreeBSD (HOW?)
- Virtualized Windows with GPU/USB PT
- AI/ML is still emerging, it's next big set of workloads FBSD should support
- Lowend IoT market is booming and represents oppty for FBSD
- There are many sophisticated engineering teams using FreeBSD from which we can draw community members and testimonials
- Recent unhappiness in Linux community over shifting interpretations of GPL create opportunity for the unambiguous BSD
- There is demand for the ability to efficiently scale containerized workloads that Jails can help with
- Cloud repatriation opens window for platform shift to FreeBSD

Threats

- Lack of mindshare/interest among students (*who cares about systems programming*) and perception that computer systems are commoditized, less curiosity about how things work
- Linux monoculture which locks out other OSes
- Poor/inaccurate perception of FreeBSD, seen as less relevant, outdated, or losing share
 - Exacerbated by limited FreeBSD participation in major industry orgs
 - Exacerbated by vendors choosing to move to Linux
- Ecosystem (HW) mindset - release cadence, docs
- Vendor willingness to include FreeBSD (e.g. for vulns)
- Maker market
- Desired release model changes (e.g. rolling releases, CI)
- Size to receive CVEs
- Changes in Arm device trees
- Pace of tech change stretches community resources
- big LITTLE and E/P cores
- Geopolitical crises (Ukraine war, risk of other conflicts)
- Limited support from large vendors (Chrome, GitHub, binaries)
- Community growth not keeping up with growth rate of overall IT community/market

How to Use SWOT Analysis - <https://youtu.be/F61jgtEZLsA?si=BrfZk8dS7UVA-at4>

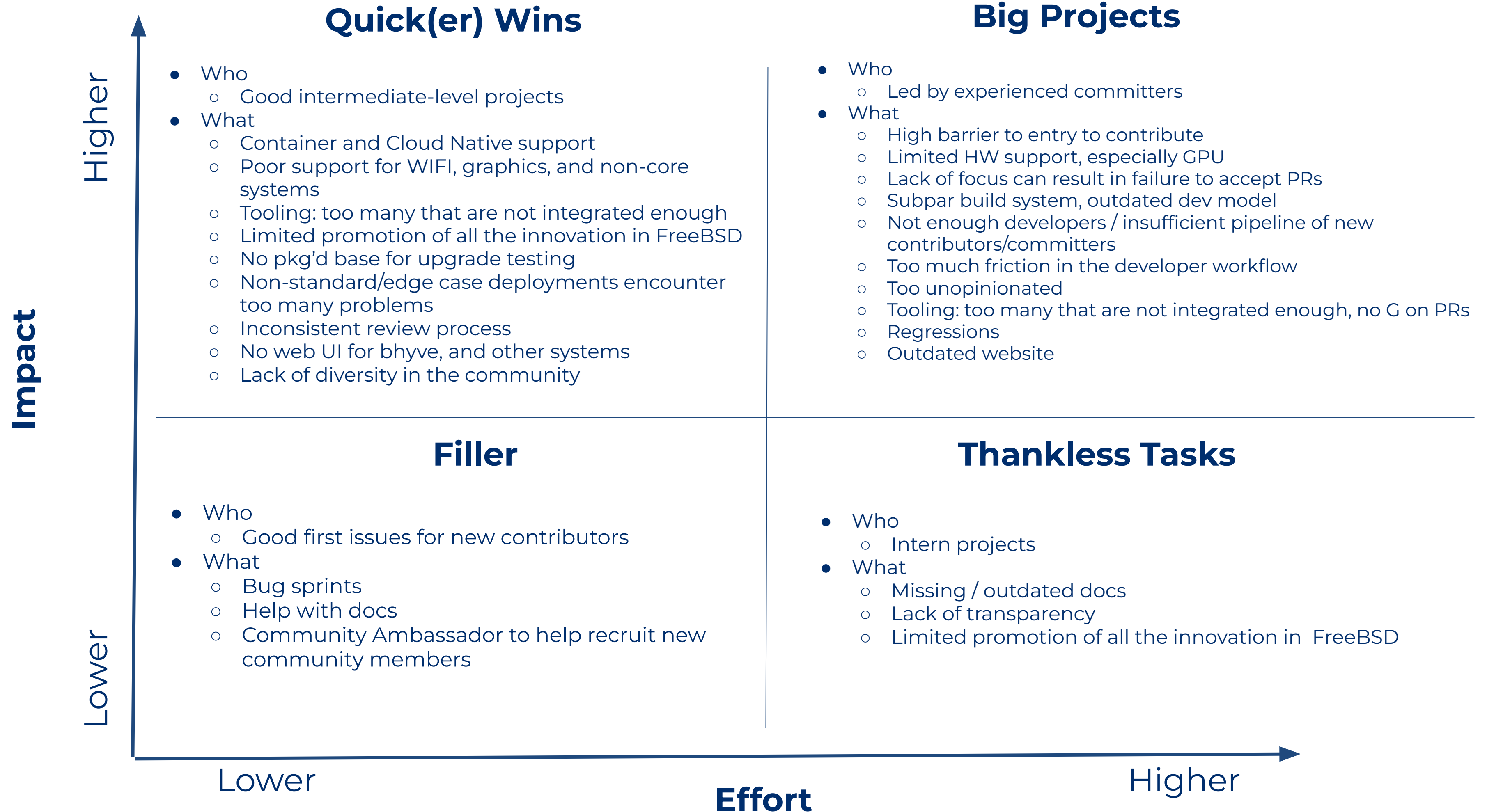
- Strengths - Some in list might be current, others might be ones we need. For needs, consider launching an initiative to develop them
- Weaknesses - pick the Urgent and Important ones to focus on - some may be obvious. Or, can use an “Effort/Impact Grid” (slide 7)
- Prioritize opportunities using a “Market Attractiveness” grid (slide 8) - Here is their video on this:
<https://youtu.be/38M8hm9Ka7E?si=tQ8X2WRVtGCAG65g>
- Keep eye on threats



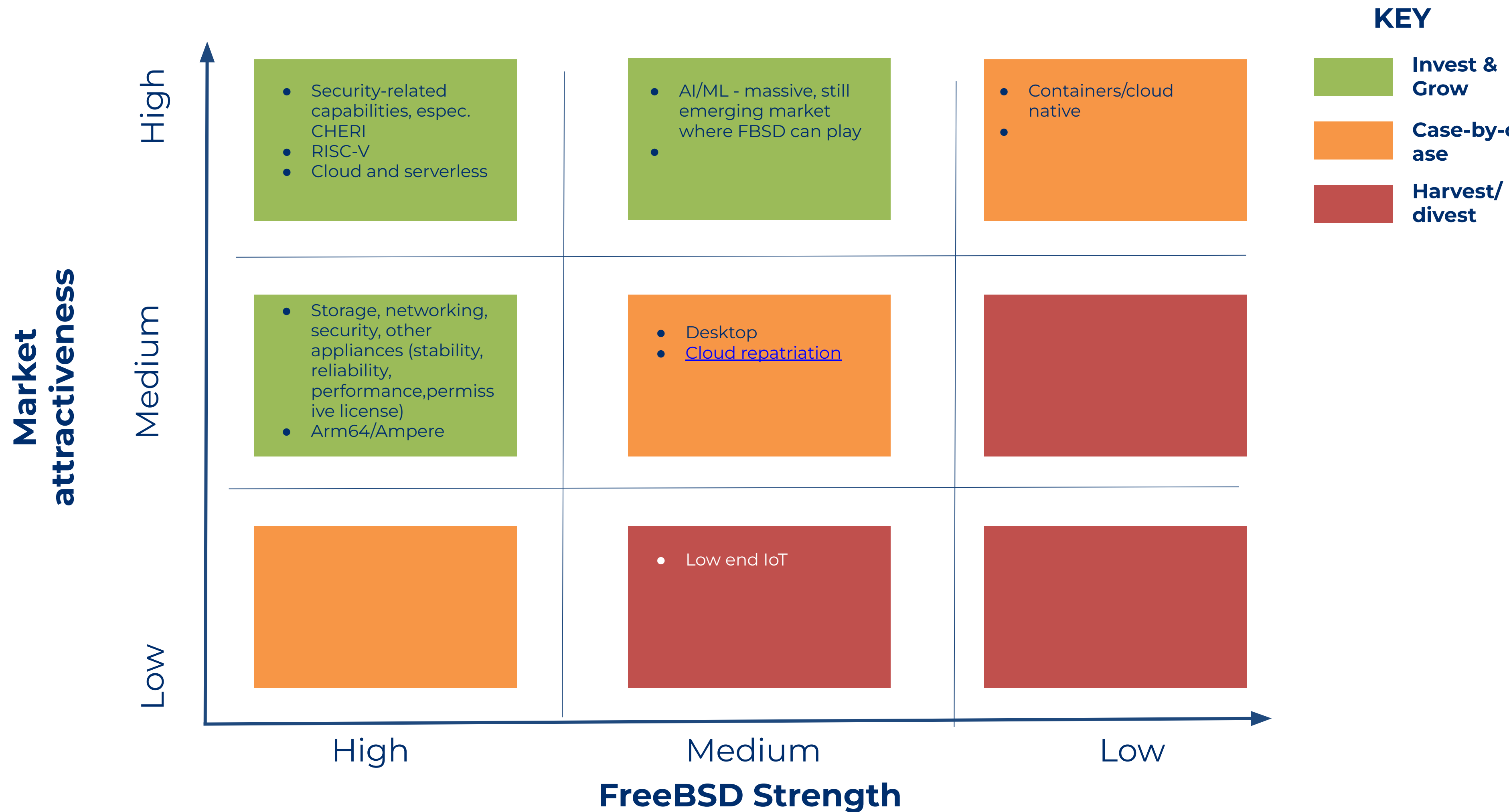
Notes on the following 2 slides

- These are incomplete and provided as straw men to get the conversation and work started towards putting the SWOT analysis into action
- I fed the SWOT into ChatGPT and asked it to perform the “Effort/Impact” and Market Assessment grid analysis
- [Here is the document](#) with what ChatGPT gave me
- I thought many of the recommendations were directionally appropriate and used many of them but also moved some things around
- AGAIN, provided here to help the group make progress, not as definitive recommendations

Effort/Impact Grid to prioritize **weaknesses** to work on, and who shld do work



Prioritize **opportunities** using market attractiveness grid





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Thank You

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