

# Open Source Networking Development: The Useful, The Scrap Heap, The Broken

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# A Brief History of Networking



*“For every thing, there is a season...”*





*Fast Forward ...*

# Open Source Is Eating the World

[https://medium.com/@\\_jogy\\_/open-source-is-eating-the-world-e6aa105488eb](https://medium.com/@_jogy_/open-source-is-eating-the-world-e6aa105488eb)

<https://medium.com/@yusufhussain/software-is-eating-the-world-open-source-is-eating-software-how-do-we-fill-the-skills-gap-717e9e9c4f38>

<https://developer.ibm.com/blogs/how-open-source-software-is-eating-the-world/>



# A pragmatic view of open source

*We contribute to a project...*

*... and others contribute to a project, with common goals...*

*... and everyone's problem is solved sooner.*

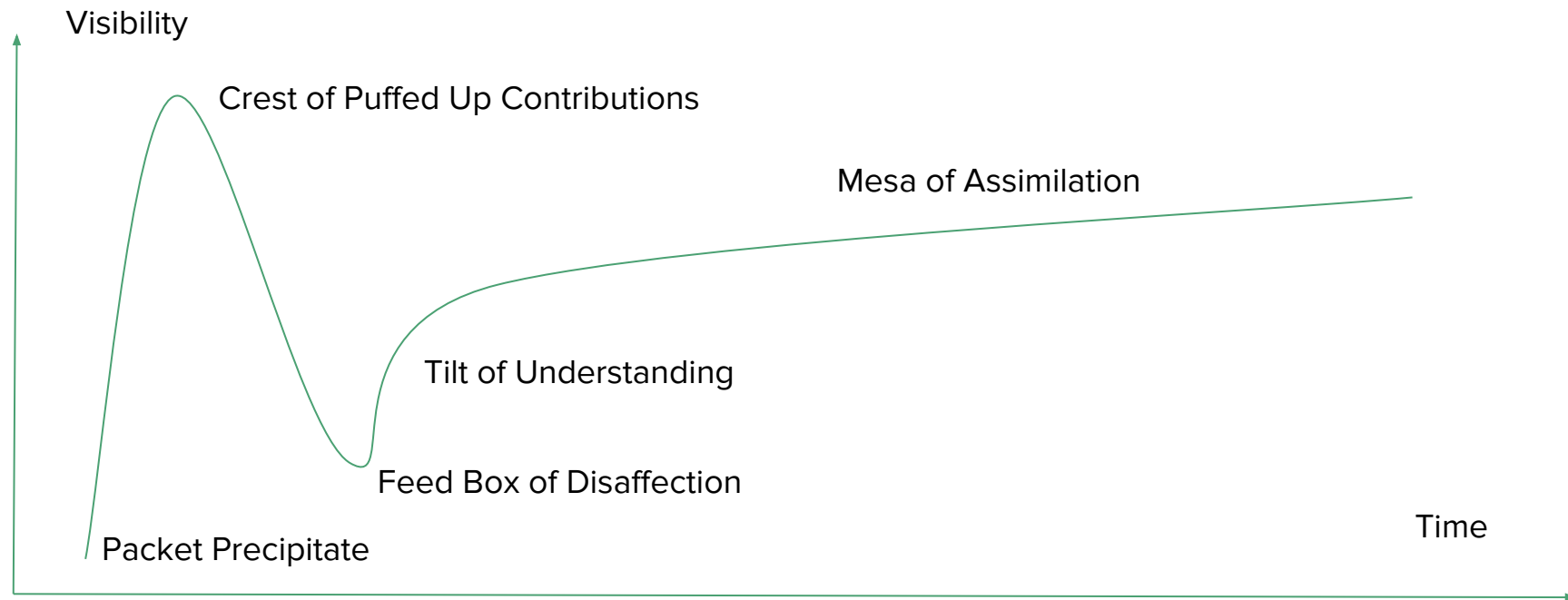
# But where do I start?



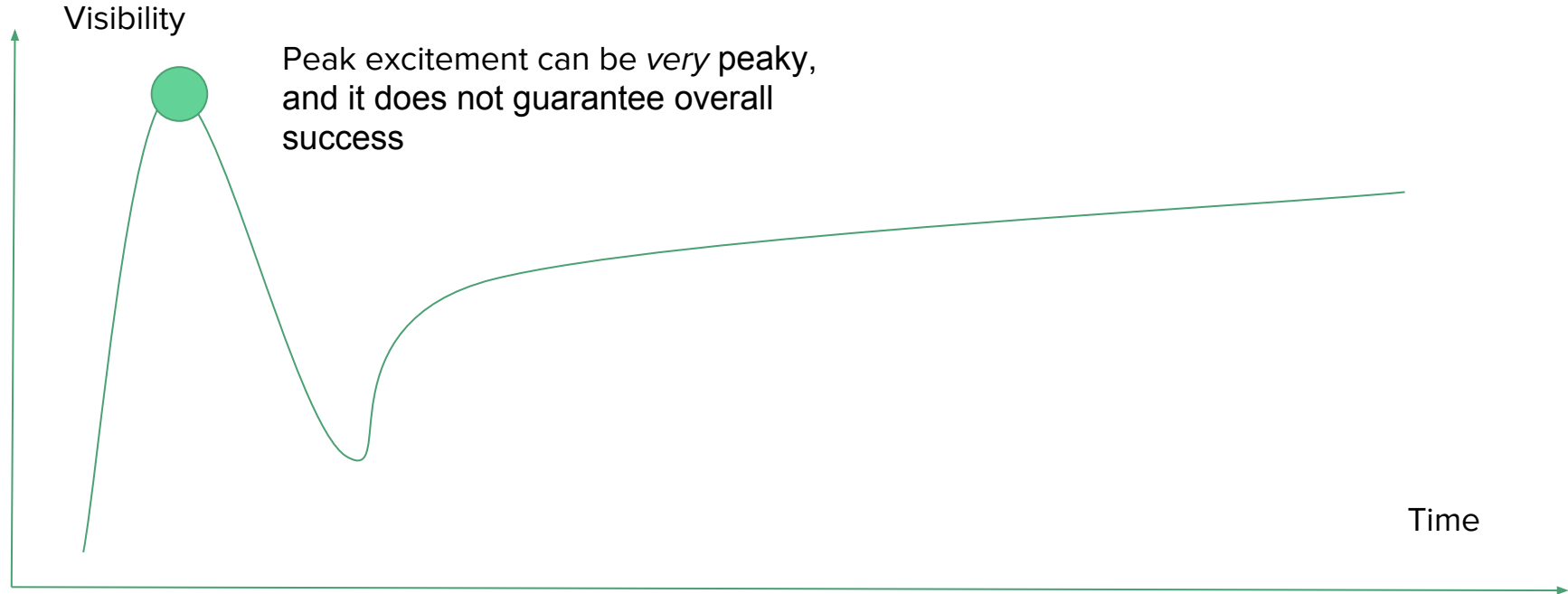
Open Source Routing  
A Project of The Network Device Education Foundation



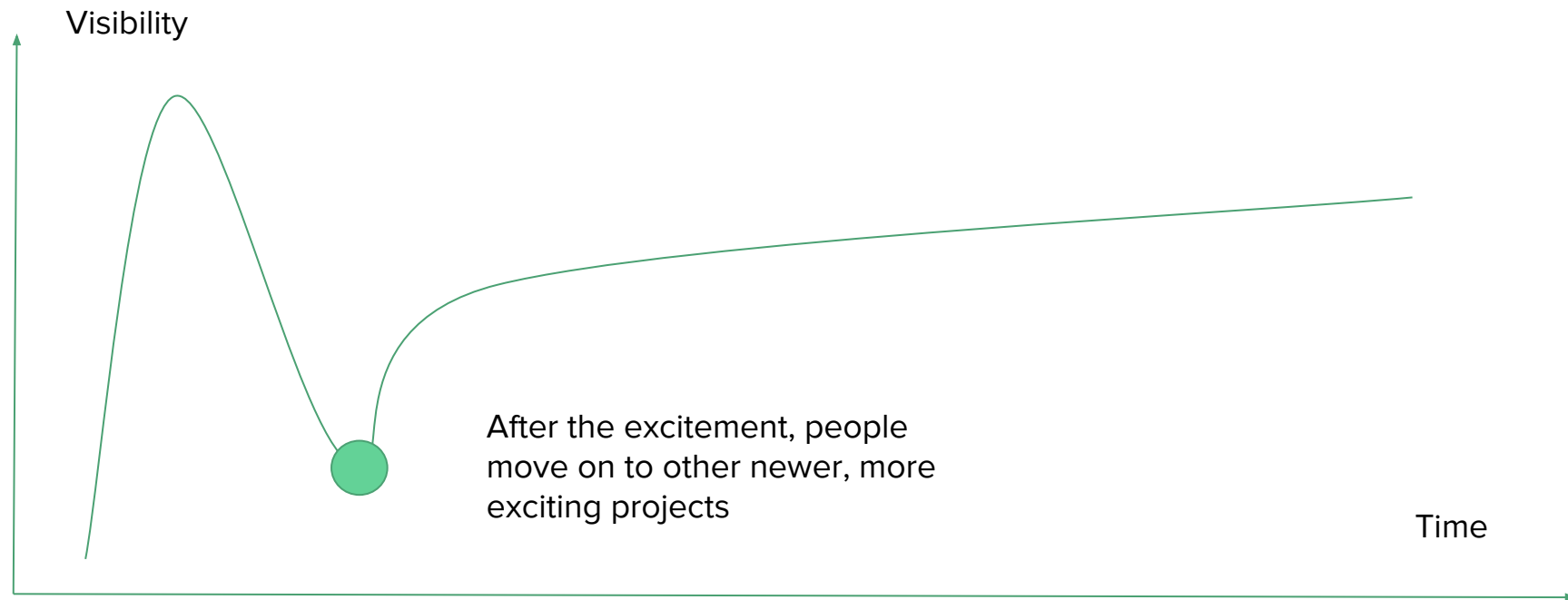
# The Hype Cycle Of Open Source Networking Development



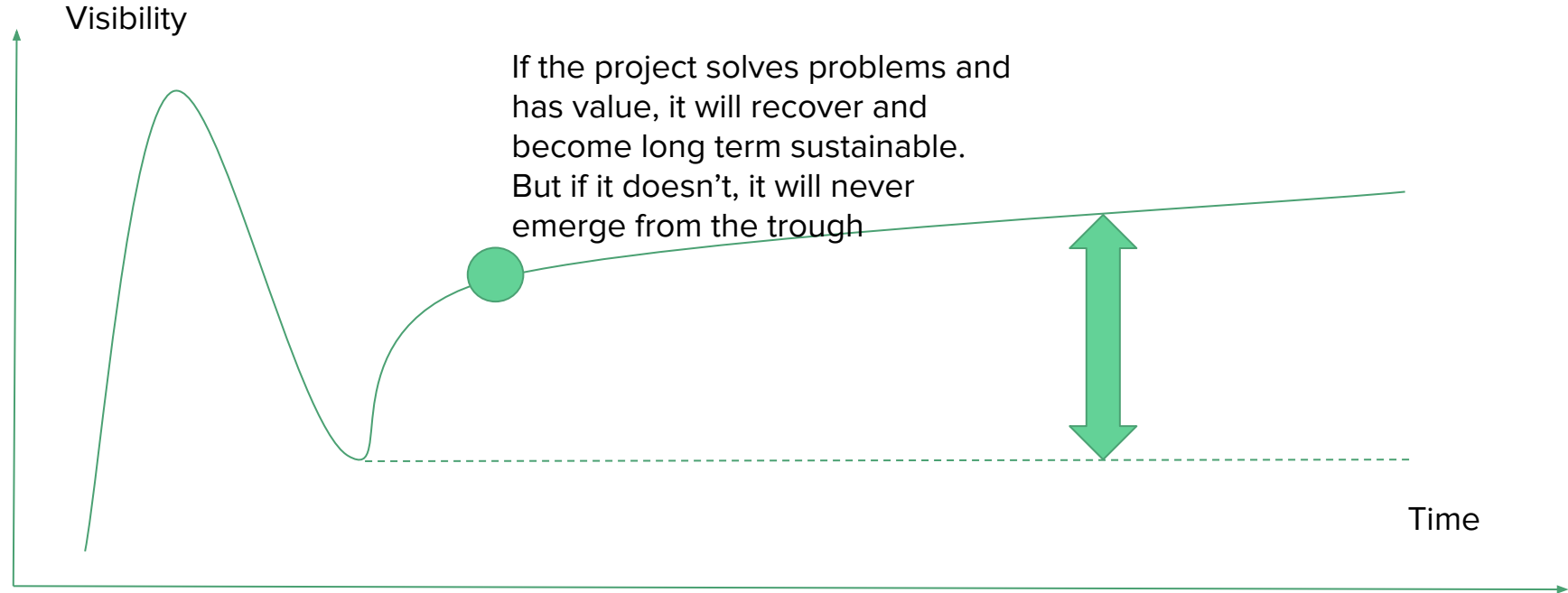
# The Hype Cycle Of Open Source Networking Development



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# The Hype Cycle Of Open Source Networking Development



# What Does It Mean To Be “Useful”

- Does it help me? Does it do what I need? Does it work?
  - If not, how sure am I that it will work one day?
- Can I make it better?
- Can I fix it?

# What Does It Mean To Be “Broken”

- Does it have a diverse community?
  - If it has one committer or source of committers, what happens when they get bored?
  - Does one committer gatekeep all commits or demand special IP rights?
- Does the community value my contributions?
  - If not, can I be certain I will never have to change it?
- Is it going in the right direction?

# What Does It Mean To Be On the “Scrap Heap”

- The project has run its course and is no longer useful.
- It picked the wrong problem to solve
  - ... or the problem has changed.
- Developers have left the project and moved on to the new hotness so there is no longer a community to help add value.

Choosing projects that aren't broken or  
on the scrap heap

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# Culture Is Important

- How easy is it to contribute to the project?
- Is there a code of conduct to handle bad actors, amongst others?
- Does the project have downtime?
  - *The difference between volunteering and thinking you've signed a lifetime contract.*
- Is it dominated by a single source of commits?
  - What happens when they lose interest?



# Does It Do What I Want And Need?

- How useful is the project?
- Is the project ready for me to deploy and use?
- Is the project in development, but moving in the direction I want?



# Project Direction Is Important

- Where is the project on the curve?
- Does it have a roadmap which matches my own roadmap?
  - Maybe it's close but not quite the same ... ok. Maybe I can help with that.
- How quickly does the project release new code?



# Release and Versioning

- The most important thing about a project: Repeatability
- How often do they release?
- Testing? Testing.



# Continuous Testing

- Continuous testing has to happen, hard stop.
  - On each commit? On each release?
  - Of lots of important things? Or one test for British English spelling?
- Bonus points: Does it test across repositories and with other projects?



Contributing To Open Source  
Networking:  
Being Part of the Solution Rather Than  
the Problem

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# Contributing: Two Ways



“I want to  
contribute,  
please help  
me!”

“Your project is  
too hard to  
contribute to.”

“I want to  
contribute,  
please help  
me!”

- **Open Source Networking Projects need more than code!**
  - Documentation
  - QA
  - Infrastructure
  - Blogs
  - IRC
- ***But reliably tested and working code is still important***

“I found a bug!”

“I am gonna  
complain about  
it, but I won’t tell  
you what it is!”

# “I found a bug!”

- **Report the bug in the project's bug tracker**
  - Include all relevant information
  - Include steps on how to reproduce
  - Hardware you used
  - Network topologies being used
- **Wait**
  - Projects work through their bug backlog in different ways
  - If no word heard after a week, poke developers on IRC, Slack or the mailing list

“I found a bug  
and I have a fix  
for the bug!”

“You’re not  
merging my bug  
fix fast enough!”

“I found a bug  
and I have a fix  
for the bug!”

- **Report the bug in the project's bug tracker**
  - Include all relevant information
  - Include steps on how to reproduce
- **Post the patch**
  - Ensure the patch passes whatever CI the project uses
  - Respond in a timely manner to comments from reviewers
  - Be thorough:
    - consider regressions, upgrade/performance implications, etc.

“I have a fancy  
new feature  
based on the  
latest IETF  
draft!”

“You must  
accept my new  
feature based  
on the latest  
IETF draft!”

“I have a fancy  
new feature  
based on the  
latest IETF  
draft!”

- **Is the project interested?**
  - Does it align with the project's goals?
  - Is it within scope of the project?
- **Add the feature to the project's roadmap**
  - Projects track these in different ways
  - Listen to feedback from other contributors

“I have a great  
project idea!  
Let's work  
together to  
figure out how  
to address  
common goals.”

“I have a great  
project idea!  
Can I replace  
you entirely but  
still be  
considered part  
of the same  
community?”

“I have a great project idea!  
Let's work together to figure out how to address common goals.”

- **Evaluate how your project idea can fit with the existing project**
  - Does it overlap?
  - Does it provide extra value?
  - Can something be abstracted?
- **Is the community interested?**
  - Does it fit the communities goals?
  - Do you have a plan for testing, documentation and support?

“Open Source  
networking is  
strategic, and I’d  
like to use it in  
my project.”

“We plan to  
leverage Open  
Source  
networking  
software.”

“Open Source  
networking is  
strategic, and I’d  
like to use it in  
my project.”

- **Evaluate the upstream project and how you can integrate it**
  - How strategic is it?
  - What value can you provide back for the value you’re receiving?

“I want to start a  
new Open  
Source  
Networking  
project!”

“Lets get it on  
the conference  
track as soon as  
we can!”




“I want to start a  
new Open  
Source  
Networking  
project!”

- **Focus on quality over splashy presentations!**
  - Is it clearly written down what the project is?
  - Is there a clearly understood architecture document?
  - Have you written working code, with a robust CI/CD system, focusing on deployment and operations?




# Comparing Open Source Contributions: FD.io, Istio, and Calico

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# Project Communication

Project	Mailing Lists	IRC / Slack	Other?
	Found <a href="#">here</a>	IRC, found <a href="#">here</a>	<a href="#">Weekly meetings</a>
	Discussion board found <a href="#">here</a>	Slack, found <a href="#">here</a>	<a href="#">Other ways to get involved</a>
	Found <a href="#">here</a>	<a href="#">Slack</a> and #calico on Freenode	<a href="#">Project Calico community</a>




# Infra and Docs

Project	Infra	Docs	New Contributors Docs
	<a href="#"><u>Gerrit</u></a>	Mostly on <a href="https://readthedocs.io"><u>readthedocs.io</u></a>	Yes, but spread across website and youtube
	<a href="#"><u>GitHub</u></a>	Mostly in-tree docs and devref, some wiki articles remain	<a href="#"><u>Yes</u></a>
	<a href="#"><u>GitHub</u></a>	Wiki articles	<a href="#"><u>Yes</u></a>




# I Want to File a Bug

Project	Where To Go	Where Bug Tracked	Notes
	<a href="#">Wiki</a> has instructions	<a href="#">Jira</a>	Excellent instructions
	<a href="#">GitHub Issues</a>	GitHub Issues and PRs	More instructions found <a href="#">here</a>
	<a href="#">GitHub Issues</a>	GitHub Issues and PRs	Not obvious when searching

# I Want to Add a Feature

Project	Where To Go	Where Feature Is Tracked	Notes
	<a href="#">Mailing list</a>	Mailing list and Jira	Discussions also happen on IRC
	<a href="#">Discussion board</a> and <a href="#">Slack</a>	PRs in GitHub	Like newer most CNCF projects, Slack is critical here
	<a href="#">Mailing lists</a> and <a href="#">slack</a>	PRs in GitHub	IRC also an option

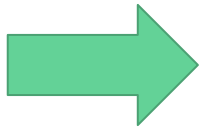
# Project Evolution

Project	Started	Evolved To	Foundation
	Seeded with VPP technology from Cisco	Squeezing more out of less, but with various control planes	Linux Foundation
	Started by Google, IBM and the Envoy team from Lyft	“Service Mesh of the Moment”	None, <a href="#">Google CLA</a> required to contribute code
	Began life as pure L3 networking for OpenStack, written in Python	Pure L3 for bare metal, VMs and containers re-written in golang	No, <a href="#">CLA</a> required for PRs

# Practical Advice on Succeeding Upstream

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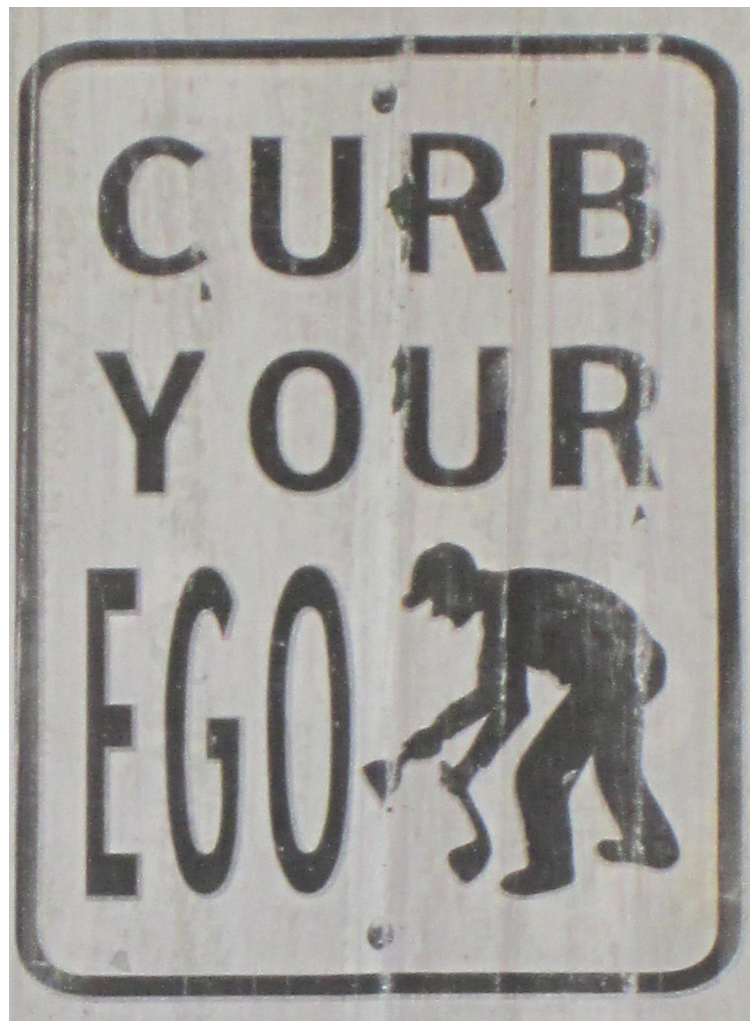
# Pick the Correct Project

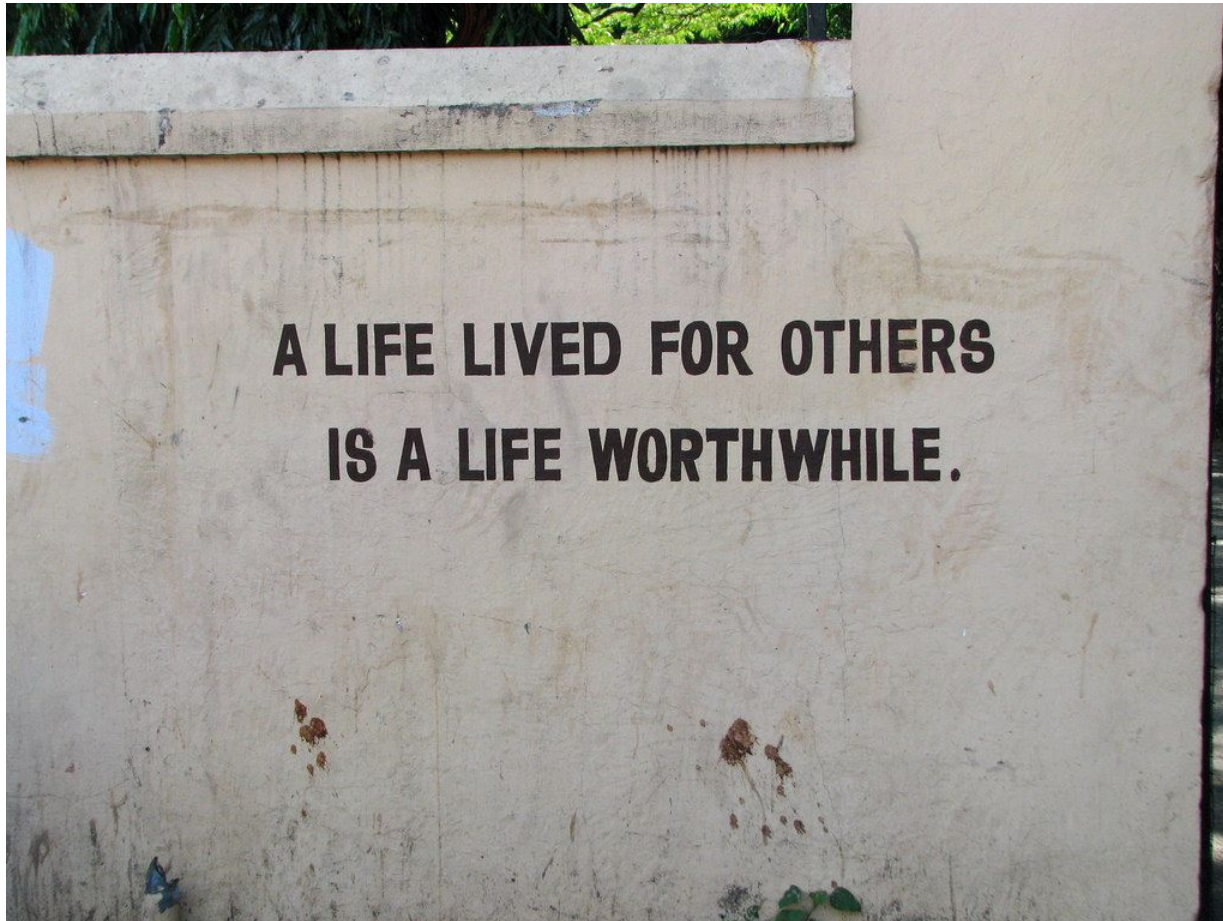




<https://www.flickr.com/photos/eddale/6925936070>







It's the little  
things in life  
that matter the  
most. Appreciate  
what you have.  
Be grateful.

LiveLifeHappy.com

*Empower your Open  
Source Developers!*



***Be Excellent To Each  
Other!***

***Thank you!***

