

# Quora's Approach To Moving Fast Sustainably

(In Ten Lessons)

*Nikhil Garg (@nikhilgarg)*

*Qcon San Francisco, 11/18/2015*

# BHIWANI BOXING CLUB (B)

BHIWANI



# IIT Delhi



# Quora

The best answer to any question



## Quora's Mission

**To Grow And Share World's Knowledge**

*“Quora is a place where a normal teenager from a remote Asian country can get direct advice from world’s top astronauts, programmers, novelists and many others.”*

**Rajeeb Banstola**

High School Student, Nepal

# How much does eating ham and bacon increase your odds of getting cancer?

 Write Answer

 Re-Ask

Follow

8

Comment

Share



## 6 Answers

---



**David Chan, MD** from UCLA, Stanford Oncology Fellowship

639 Views • David is a Most Viewed Writer in Cancer with 310+ answers.

It very difficult to separate out specific food items from confounding variables. There is pretty good evidence that **obesity** puts people at risk for cancer. In fact, obesity is overtaking tobacco products as the leading cause of cancer in North America.

What are the things that obese people have in common. They eat a lot of calories. They don't exercise. They eat more meat (processed and others) and typically less fruit and

# Would a rejection of the Iran nuclear deal by the US Congress be a vote for war?

Source: [Rejecting Iran nuclear deal is a vote for war, Obama says - BBC News](#) 

 Write Answer

 Re-Ask

Follow

339

Comments

10+

Share

80



## 39 Answers



**Barack Obama**, President of the United States

400.8k Views • Upvoted by [Marc Bodnick](#), [Former Stanford PhD student in Politics](#) • [Sina Taghva](#), [Born and living in Tehran](#) • [David Waddell](#), [BBC journalist, international specialist](#) • [Holly Gressley](#) • [Neeraj Agrawal](#) • 68 others you follow  
Answer featured in NBC News and 5 more.

The congressional vote on the [Iran nuclear agreement](#) is the most consequential foreign policy debate our country has had since the invasion of Iraq in 2003. So thank you for asking this question, it's an important one.

As Commander-in-Chief, I have no greater responsibility than keeping our country safe,





# Most Viewed Writers in Software Engineering

The 10 writers with the most answer views in the last 30 days.

---

499,920

Views



**Valentin Popescu**, Software Architect

[View 15 Answers](#) • [Endorse](#) • [Suggest Bio](#)

---

469,393

Views



**Quincy Larson**, teacher at FreeCodeCamp.com

[View 68 Answers](#) • [Endorse](#) • [Suggest Bio](#)

---

330,294

Views



**Drew Eckhardt**, 20 years as a systems software engineer for business critical applications wi...

[View 280 Answers](#) • [Endorse](#) • [Suggest Bio](#)

```
@Quora {
```

```
    Founded in 2010
```

```
    65 Engineers
```

```
    Python, JS, C++
```

```
}
```

1. Moving Fast
2. Moving Fast Recklessly
3. Ten Lessons For Sustainability

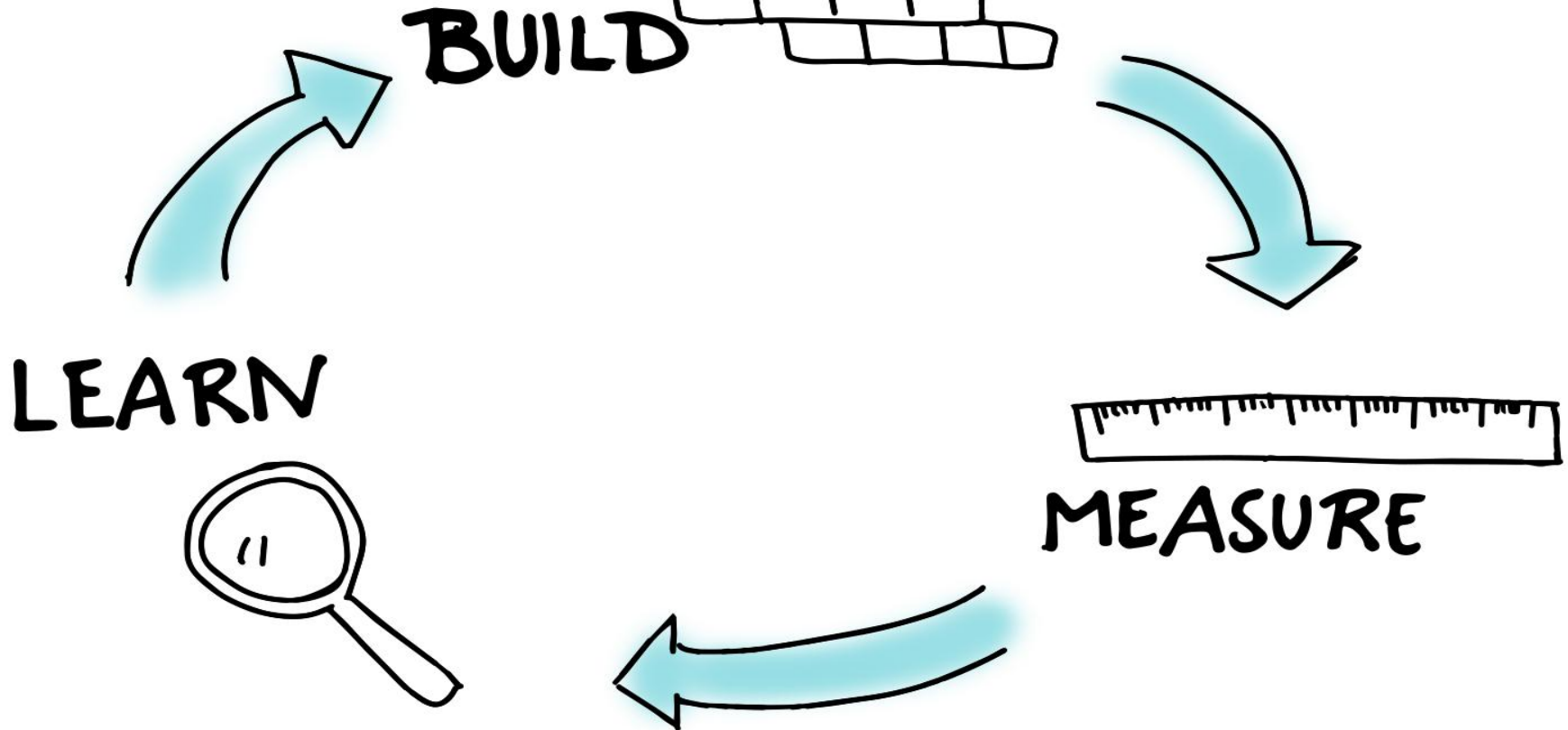
**1. Moving Fast**

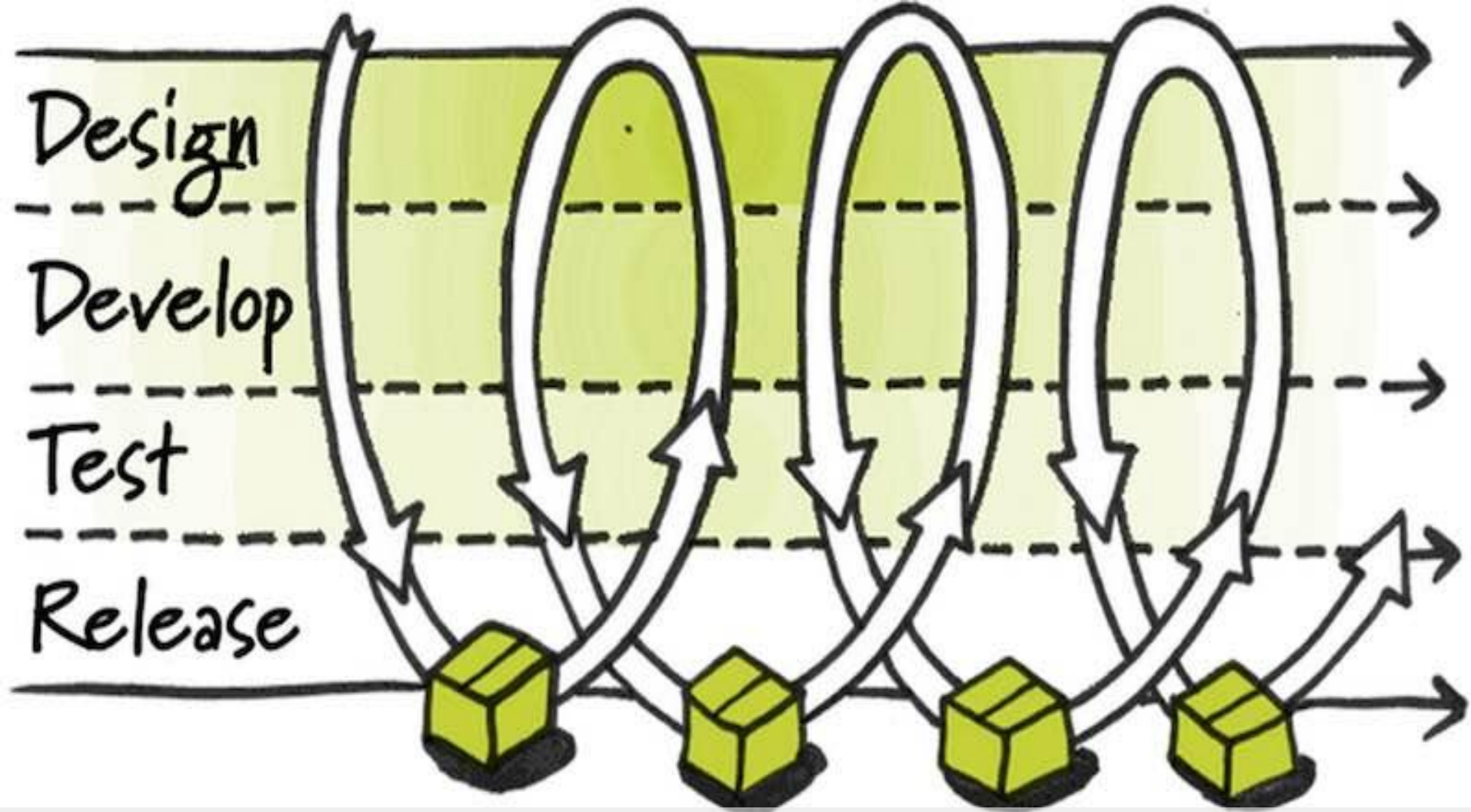
2. Moving Fast Recklessly

3. Ten Lessons For Sustainability



# Maximizing Innovation





# Winner Takes All



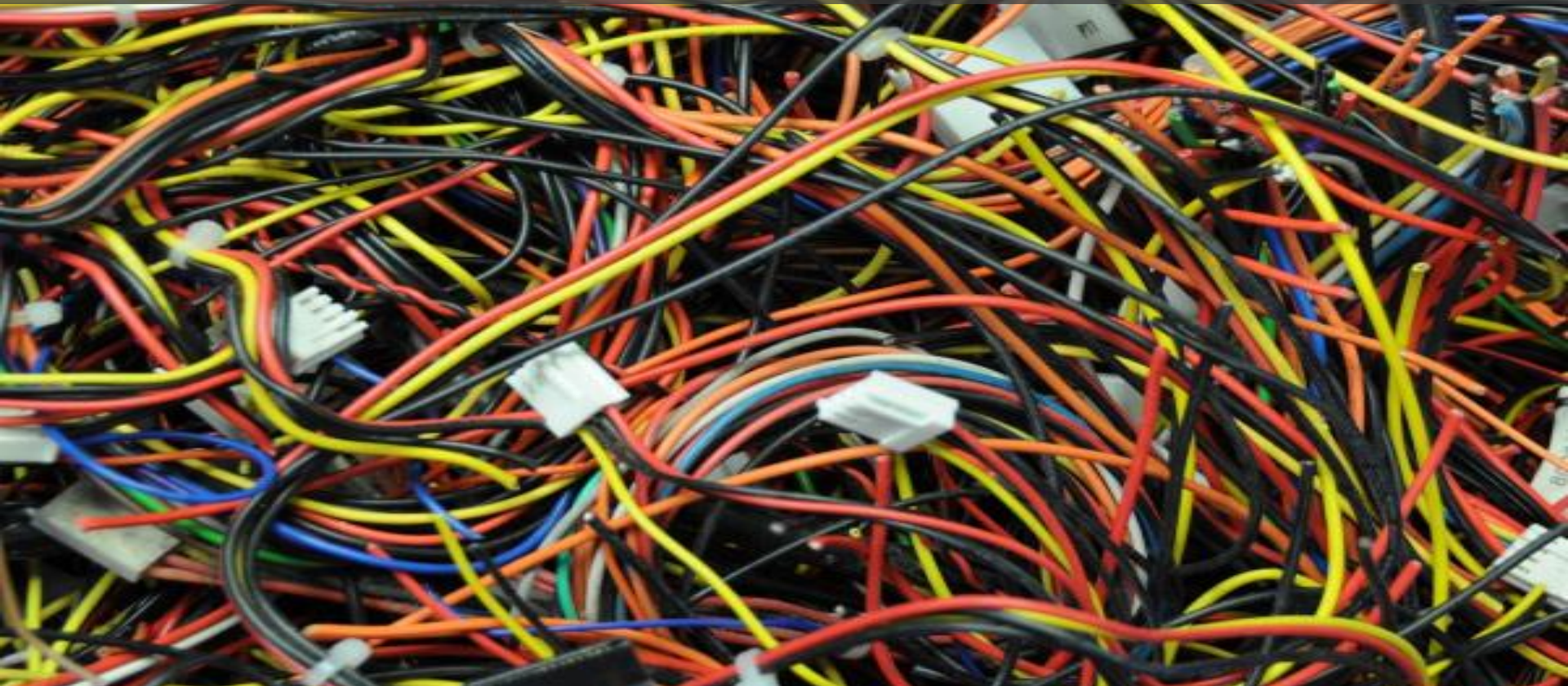


1. Moving Fast

**2. Moving Fast Recklessly**

3. Ten Lessons For Sustainability

# Code Becomes Messy



# Developers Become Unhappy



# Development Can Just Halt



**...So Must Move Fast, Sustainably**



1. Moving Fast

2. Moving Fast Recklessly

**3. Ten Lessons For Sustainability**

# 1. Move Fast, On Average



# 2. Define Your Long-Enough Term





# 3. Do The Math. There IS Free Lunch



Building a Linter takes 4 weeks (160 hours)

Saves 1 hour per developer per week

At 50 developers, saves 50 hours per week

Saves 400 hours in 8 more weeks

# Qlint: Quora's Python Linter



```
692
693     for tid, has_good_bio in zip(tids, has_good_bio_list):
694         if has_good_bio:
S>695             bio = yield get_best_bio_for_uid_tid.async(uid, tid)
696                 _BestBioForUserAnswer(uid, aid).set(bio)
697             return
698
699     # if none of the bios are expert, return the user's profile bio.
700     profile_sig = a.model.sig.Sig(uid)
701     _BestBioForUserAnswer(uid, aid).set(profile_sig)
702
```

CWD: /home/nikhil/ans/web/lib/a ~/ans/web/lib/a/model/answer/credibility.py

E826 Avoid yielding in a loop in an async function

```
model/answer/credibility.py:695: E826 Avoid yielding in a loop in an asynq function
    has_good_bio_list = yield tuple(
        user_has_expert_or_world_expert_bio_for_topic.async(uid, tid) for tid in tids)

    for tid, has_good_bio in zip(tids, has_good_bio_list):
        if has_good_bio:
-         bio = yield get_best_bio_for_uid_tid.async(uid, tid)
            _BestBioForUserAnswer(uid, aid).set(bio)
        return

    # if none of the bios are expert, return the user's profile bio.
    profile_sig = a.model.sig.Sig(uid)
```

No replacement found. Edit manually? (e or y = edit [default], n = no, q = quit)? █

```
569         container_id,  
570         reply_to_id,  
571         include_deleted)  
572     for row in rows:  
573         comment = cls.from_row(row)  
574         # TODO(veni): this is temporary during comments cleanup  
575         comment._prime_row()
```

#### Lint: E809

[Line 575](#) [Previous](#) · [Next](#)

Accessing private member `comment._prime_row`. See [http://i.quora.com/internal/style\\_guide/python#imports-do-not-use-private-members-from-other-modules](http://i.quora.com/internal/style_guide/python#imports-do-not-use-private-members-from-other-modules)

```
576         yield
```

```
577
```

# Soon Going to Open Source Qlint :)

HELLO  
MY NAME IS

Open Source



# 4. Commit Publicly





Define your long-enough term

Publicly commit to it

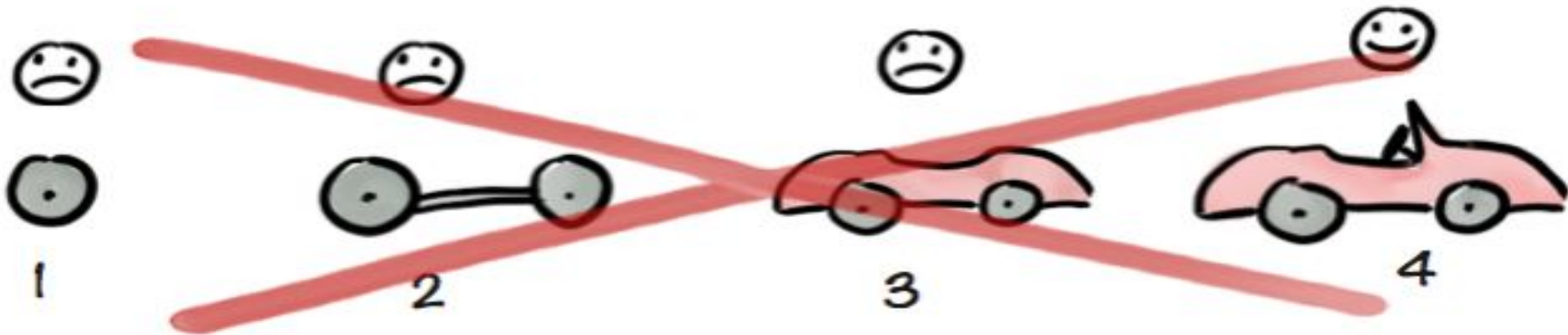
Empower developers to order free-lunch

Enjoy higher increased average speed

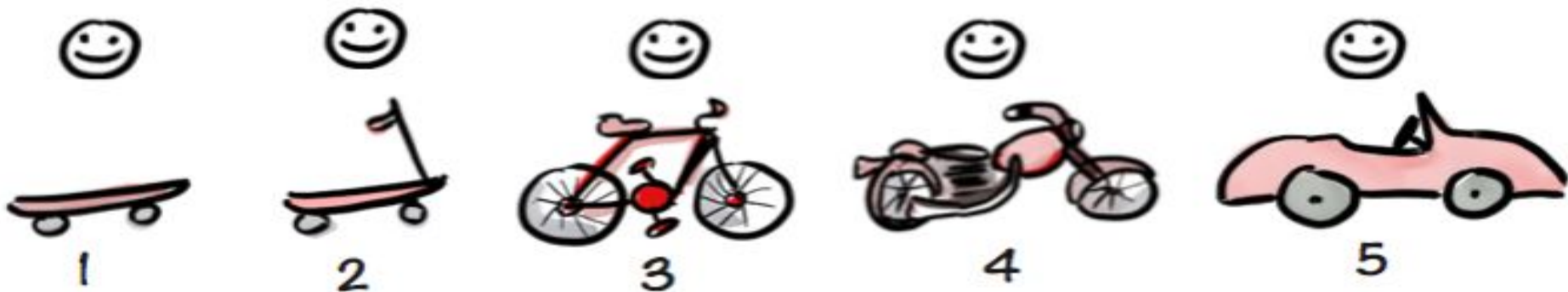
# 5. Cut Corners In Scope



Not like this....



Like this!





# Most Viewed Writers in Software Engineering

The 10 writers with the most answer views in the last 30 days.

---

499,920

Views



**Valentin Popescu**, Software Architect

[View 15 Answers](#) • Endorse • Suggest Bio

---

469,393

Views



**Quincy Larson**, teacher at FreeCodeCamp.com

[View 68 Answers](#) • Endorse • Suggest Bio

---

330,294

Views

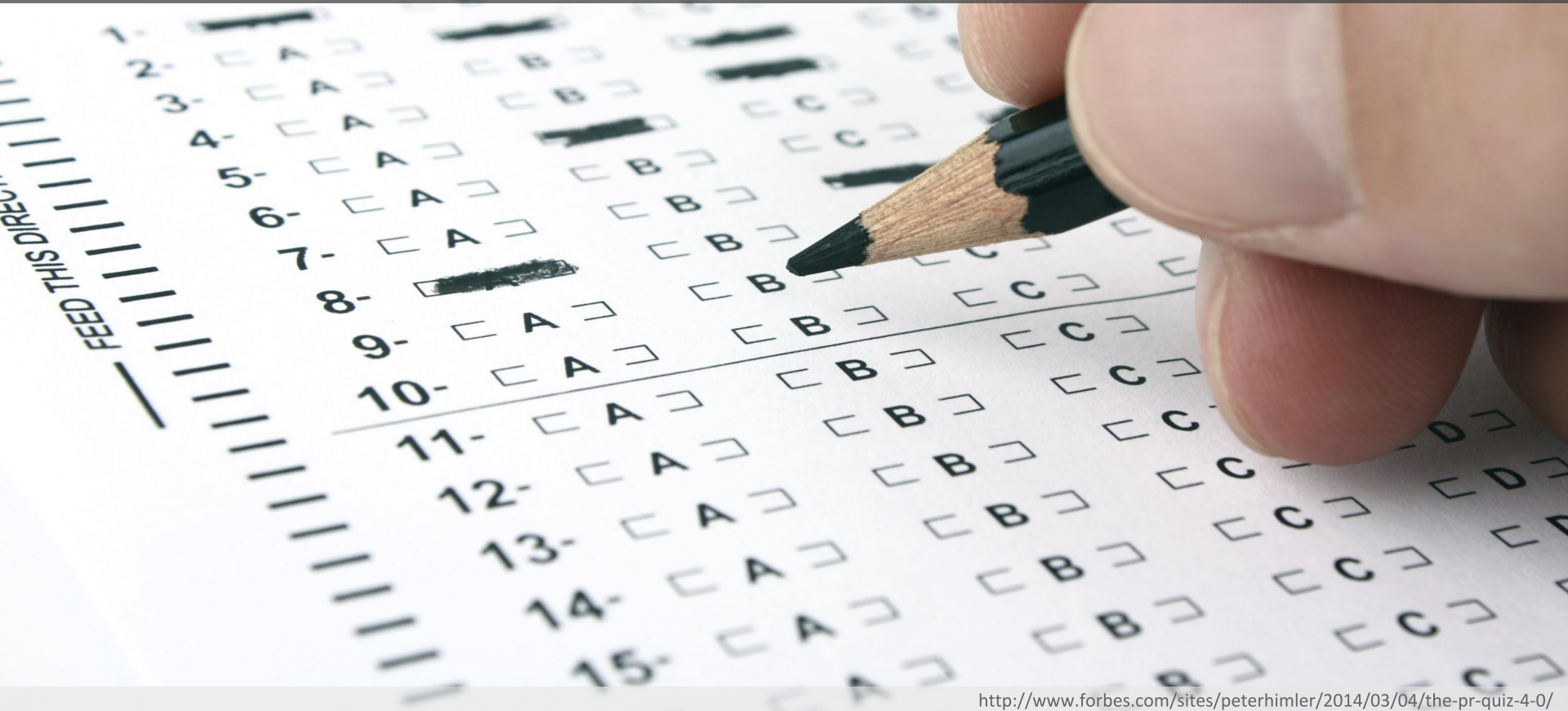


**Drew Eckhardt**, 20 years as a systems software engineer for business critical applications wi...

[View 280 Answers](#) • Endorse • Suggest Bio



# Testing At Quora



## Revision overview

Author / Rev	Enqueue time	Unit tests	Packages	Integration	Deploy status
<a href="#">Albert Sheu</a> <a href="#">2c59022</a>	Apr 26 2013, 01:29:17 PM	in progress (37%, 2:11)	us-east-1 in progress (2:24) us-west-1 in progress (1:54)	not started	unreleased <input type="button" value="block"/>
<a href="#">Nikhil Garg</a> <a href="#">8b8dcea</a>	Apr 26 2013, 01:19:12 PM	passed (6:33)	us-east-1 ok (1:35) us-west-1 ok (3:17)	passed (4:03)	Apr 26 2013, 01:27:01 PM (97%)
<a href="#">Kah Seng Tay</a> <a href="#">b0b3078</a>	Apr 26 2013, 01:13:43 PM	passed (5:42)	us-east-1 ok (1:59) us-west-1 ok (2:57)	passed (3:45)	Apr 26 2013, 01:20:51 PM (3%)
<a href="#">Rebekah Cox</a> <a href="#">be5e8eb</a>	Apr 26 2013, 12:56:47 PM	passed (5:47)	us-east-1 ok (2:29) us-west-1 ok (3:21)	passed (3:20)	Apr 26 2013, 01:04:03 PM
<a href="#">Kah Hong Tay</a> <a href="#">79a0d3b</a>	Apr 26 2013, 12:30:21 PM	passed (5:55)	us-east-1 ok (1:50) us-west-1 ok (2:57)	passed (3:32)	Apr 26 2013, 12:37:11 PM
<a href="#">Alex Yakunin</a> <a href="#">16cf597</a>	Apr 26 2013, 12:21:39 PM	passed (6:06)	us-east-1 ok (1:44) us-west-1 ok (2:57)	passed (3:16)	Apr 26 2013, 12:28:20 PM

```
$ test-local
Checking for all stray .pyc files... DONE
Finding suitable test files for testing changes made between 1b622e5 and 0e35246 (including uncommitted changes)...
Found 2 Python test files containing 15 tests. Running nosetests on following:
* model/question/test_user.py
* model/topic/test_merge.py
```

```
a.model.question.test_user.TestAllTopicQuestionsByUserByTime.test_simple ... ok
a.model.question.test_user.TestQuestionsOfUserByTime.test_add ... ok
a.model.question.test_user.TestQuestionsOfUserByTime.test_delete ... ok
a.model.question.test_user.TestQuestionsOfUserInTimeRange.test_bound ... ok
a.model.question.test_user.TestQuestionsOfUserInTimeRange.test_no_end ... ok
a.model.question.test_user.TestQuestionsOfUserInTimeRange.test_no_range ... ok
a.model.question.test_user.TestQuestionsOfUserInTimeRange.test_no_start ... ok
a.model.question.test_user.test_all_questions_of_user.test_all_questions_of_user ... ok
a.model.question.test_user.test_initial_anon.test_initial_anon ... ok
a.model.question.test_user.test_privacy.test_privacy ... ok
a.model.question.test_user.test_questions_of_user_in_year.test_questions_of_user_in_year ... ok
a.model.topic.test_merge.test_follow_merge.test_follow_merge ... ok
a.model.topic.test_merge.test_is_merged.test_is_merged ... ok
a.model.topic.test_merge.test_iter_network_merges.test_iter_network_merges ... ok
a.model.topic.test_merge.test_merge_exception.test_merge_exception ... ok
```

```
-----
Ran 15 tests in 10.941s
```

```
OK
```

```
$
```



# 7. Reward Acceleration



# Code Cleanup



# Automation



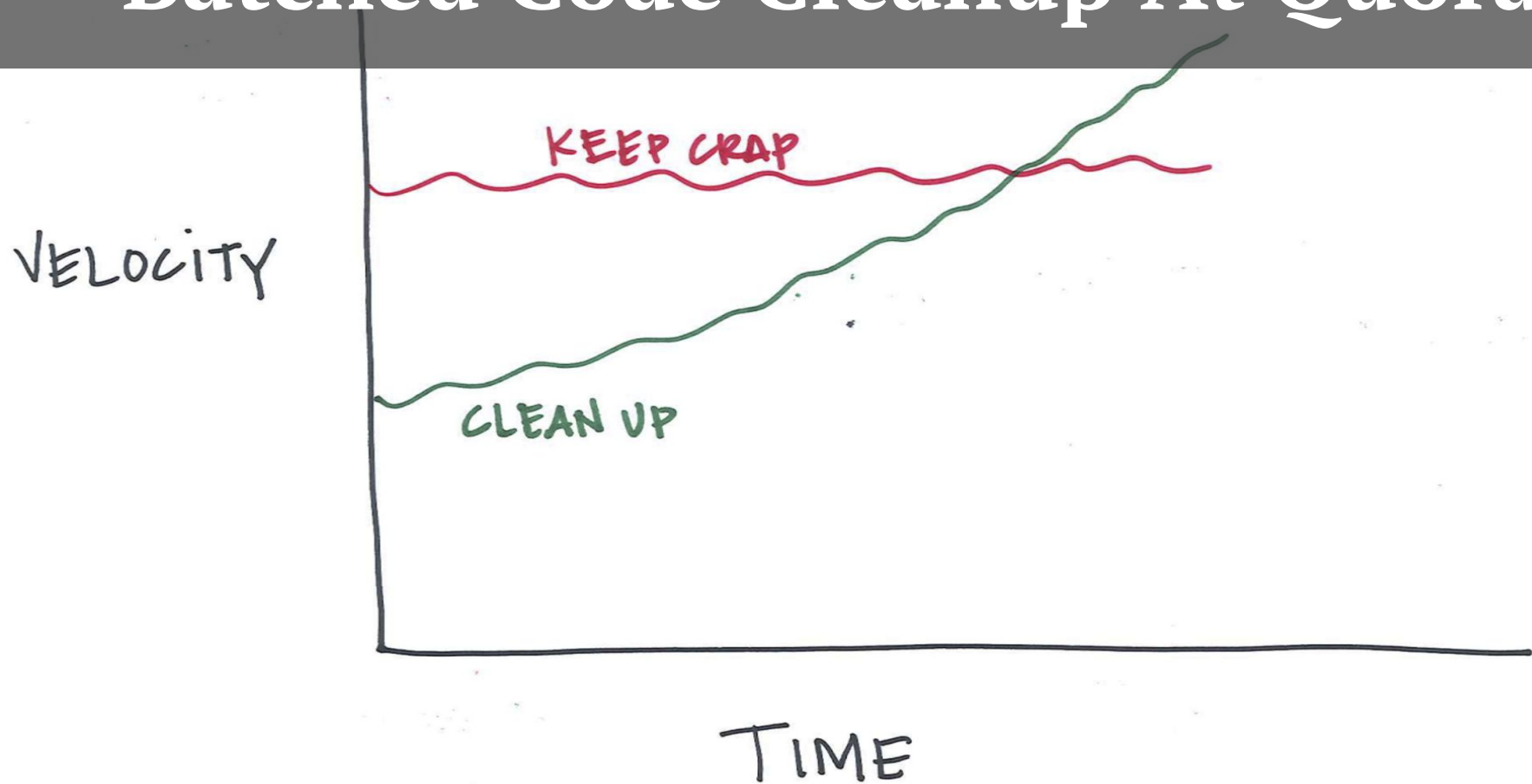
# 8. Prevent Deceleration



# Slow Creep Of Complexity



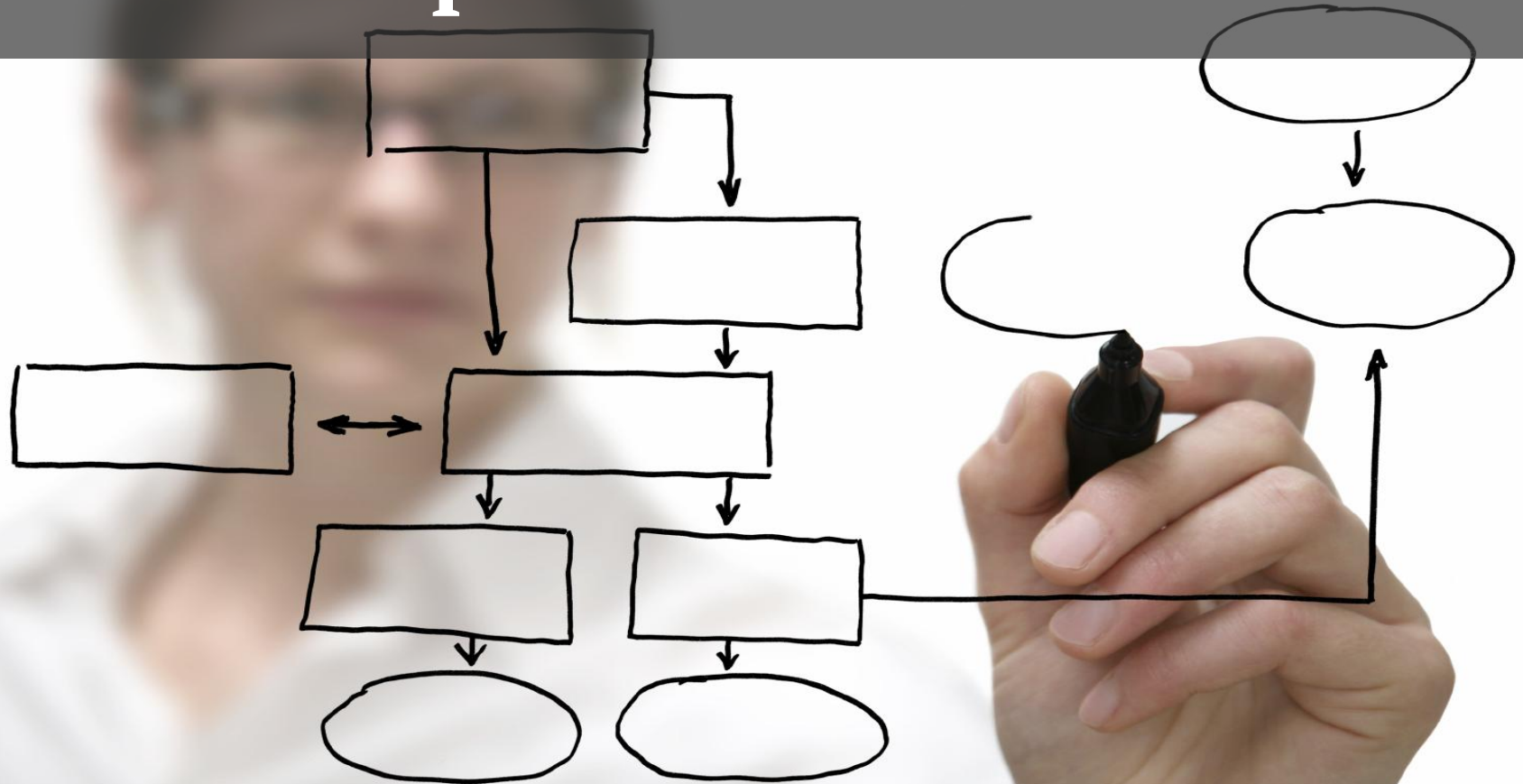
# Batched Code Cleanup At Quora



# Codebase Is A Tree



# 9. Optimize Processes

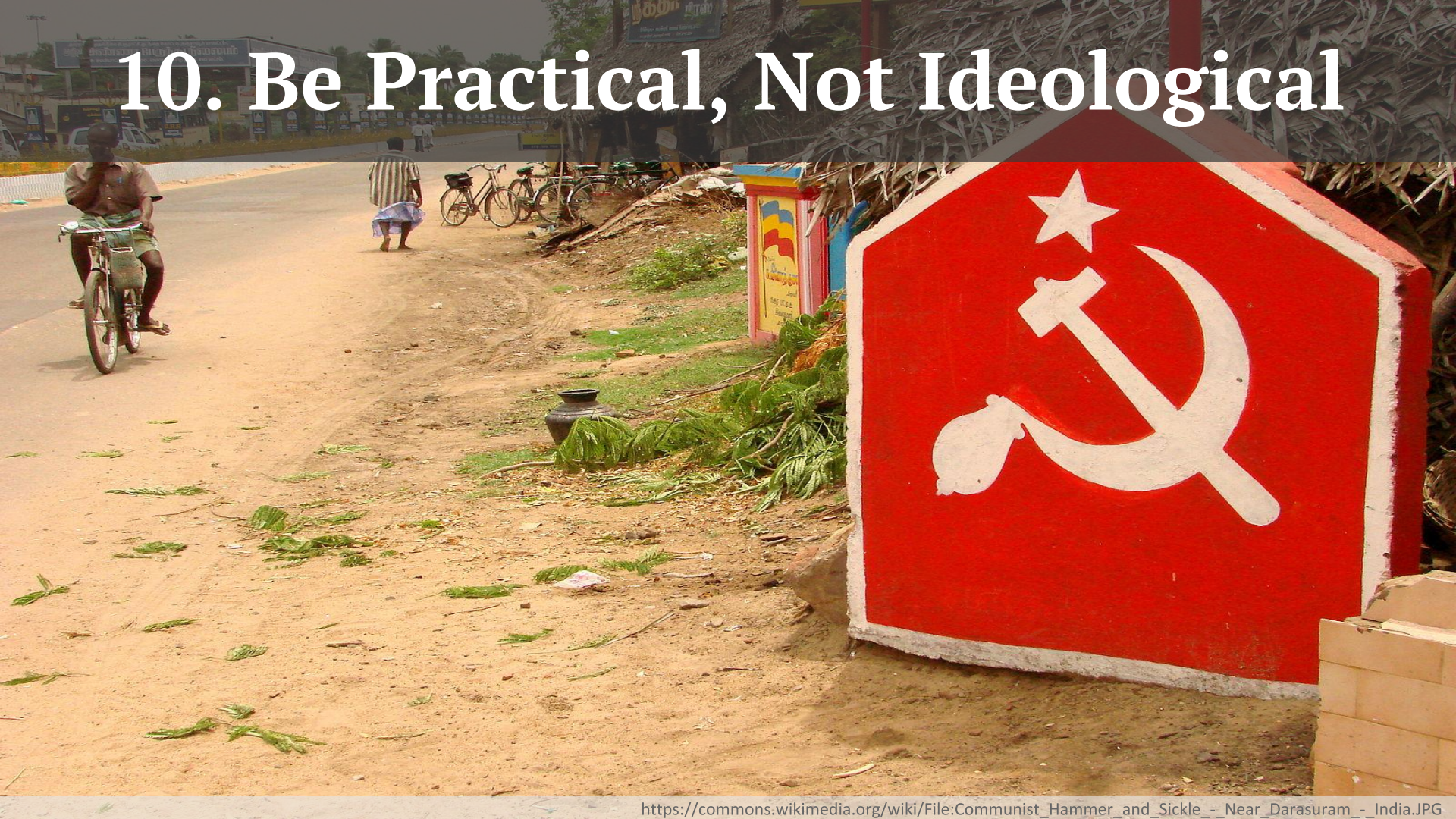




# Continuous Deployment

**'Git Push' To Production In 10 Minutes**

# 10. Be Practical, Not Ideological



# Code Reviews Are Awesome

Close

chunho

Line 213 [Previous](#) · [Next](#) · [Reply](#)

maybe add comment on why this is needed?

214

215

216

217

218

219

220

221

222

```
# only 1 answer (self.aid), return dictionary of value 1
assert_eq(
    {self.topic1.tid: 1, self.topic2.tid: 1},
    num_answers_by_topic_for_answer_uid(self.uid, self.aid))

# 20 answers in tid1, 15 in tid2
@async()
def mock_fn(uid, tid, include_collapsed=True):
```

chunho

Line 222 [Previous](#) · [Next](#) · [Reply](#)

ideally we should use `include_collapsed=False` here, since `num_public_answers_of_user_by_topic` has this default value this way

or is it b/c it's causing extra complexity?

Style / Design

Education / Collaboration

Correctness [?]

[?] <http://research.microsoft.com/pubs/180283/ICSE%202013-codereview.pdf>

**But Pre-Commit Reviews Are Costly**

**BLOCKED**

Taking continuous deployment to the next level

# Post Commit Code Reviews

(Code is reviewed after it goes to production)

Style / Design

Education / Collaboration

Correctness [?] → Testing

[?] <http://research.microsoft.com/pubs/180283/ICSE%202013-codereview.pdf>

# Fall Back To Pre-Commit Reviews





# Codebase Is A Tree



**Easier to ask for forgiveness than permission!**



Avoid truly terrible outcomes

Maximize expected speed

Minimize bad outcomes

# Summary

Move Fast, On Average

Optimize Productivity Bottlenecks

Define Your Long Enough Term

Reward Acceleration

Do the Math. There IS Free Lunch

Prevent Deceleration

Commit Publicly

Optimize Processes

Cut Corners In Scope

Be Practical, Not Ideological

- Empower developers to move fast on average over long enough term by getting free lunch.
- Profile productivity like code, measure, optimize, make practical trade-offs.
- Post commit code reviews work, codebase is a tree.

# Thank you!

Quora Is Hiring

Nikhil Garg

@nikhilgarg28 { Gmail, Github, Twitter, LinkedIn }