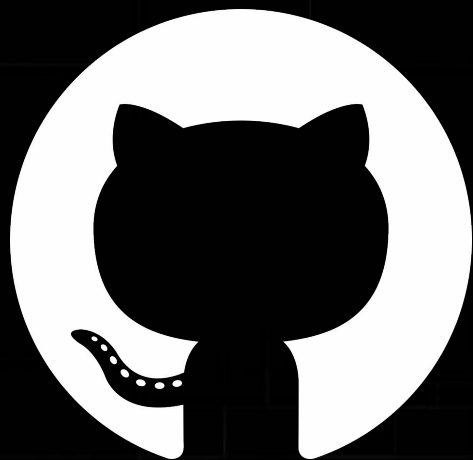


Satellite  
INDIA 2021



# **Building GitHub**

**Engineering Practice and Culture**

**Sanjay Malpani (@smalpani-gh)**

## GitHub Scale

**Developers**

56+ m

**Repos**

100+ m

**CPU Cores**

50K

**K8 Pods**

26K

## Engineering in Numbers

**Engineers**

~1000

**Builds**

600k (97%)

**Time** (90%)

0.5 Hrs

**PRs**

4390

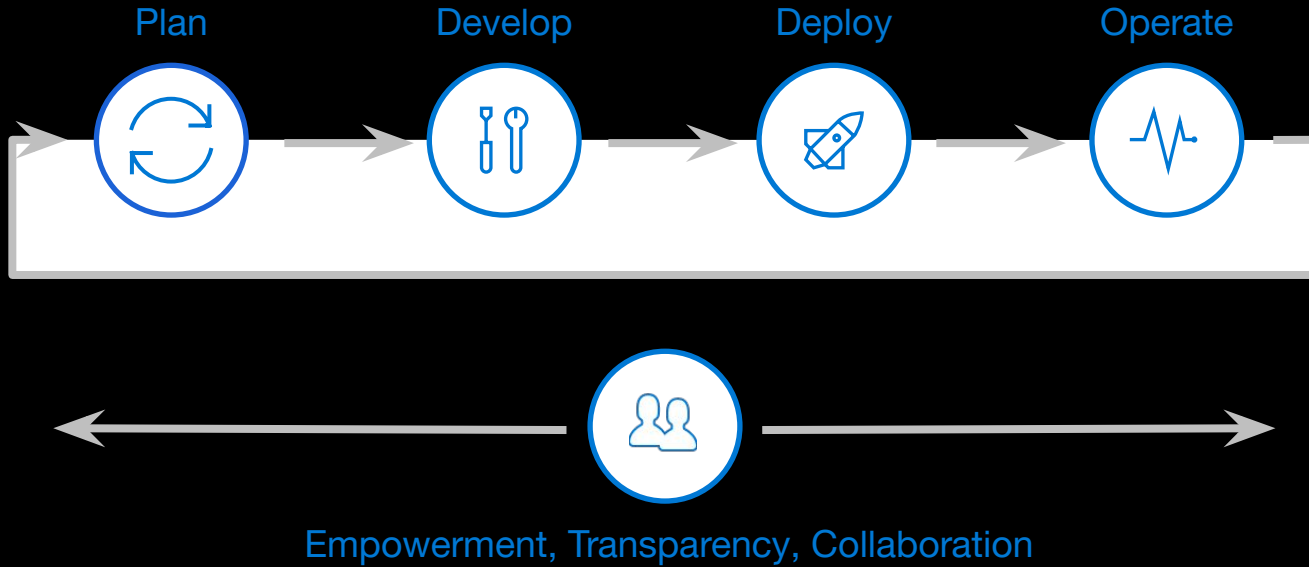
**Deployments**

535 (98%)

**Time** (90%)

2.8 Hrs

## Engineering Process



# Plan

23 Q2 2021 – Apr-Jun ...

11 results

- ① High contrast themes ...  
#174 opened by github-product-roadmap  
all cloud ga github enterprise  
other
- ① Dimmed theme ...  
#175 opened by github-product-roadmap  
all cloud ga github enterprise  
other
- ① Deuteranomaly colorblind theme ...  
#176 opened by github-product-roadmap  
all cloud ga github enterprise  
other
- ① Secret scanning: user defined patterns ...  
(cloud beta)  
#160 opened by github-product-roadmap  
beta cloud github advanced secur...  
security & compliance
- ① Role-based Access Control (RBAC) - Custom Roles with fine-grained repo permissions ...  
#111 opened by github-product-roadmap  
admin-cloud beta cloud  
github enterprise
- ① Enterprise explore page and improved InnerSource discovery ...

Public Roadmap

○ Not yet started 🟢 On track ✅ Done ⚠️ May miss target 🔴 Not meeting target

🔖 1. Objective: The home for all student developers is GitHub Global Campus

#	Key Result	Sponsor	Jan		Feb	
			Score	Details	Score	Details
1	Ensure average time to review for SDP and Toolbox is less than 4 days	Scott...	🟢	1.9 days <a href="#">Average Time to Review</a> Work done with OCR, manual analyst squads helping us stay under SLA.	🟢	Avg review time at 2.3 days. 106K DRs (+8K MoM) and automated review% stayed at 74%
2	Launch an MVP of GitHub Global Campus governance in North America and India	Moir...	🟢	<a href="#">Successful launch</a> on 3/1, final outcome on March 15	🟢	30-day application window closed, <b>5k applications</b> received, Field Expert review currently at 50%, on target for March 15th completion

OKR

Initiatives:

P0:

- [Campus Experts 2.0](#)
  - [Initiative: Application for Campus Experts & Advisor](#)
- [Education.github.com](#)
  - [Initiative: Move GitHub education to Moda](#)

Initiatives

⚠️ **Tracking: Reduce the average verification time for Education Discount Request applicants** ...

📄 0 of 8

education-web#3972 opened by kuychaco

EPICs

# Develop

## Teams GA - Features

### Problem Statement

This EPIC is tracking GA features for teams

- reminders (both personal and team level) with inplace experience in teams

### EPD (more info)

- Engineering  
@snankani
- Product  
@ashokirla
- Design  
@vivekmhatre727

### Measuring Success

dashboards, KPIs, and other indicators of success for this epic

### Definition of Done (List of Features making this EPIC)

- Spikes on Dotcom side
- Spikes on Teams side

### Risks

list of known risks, with mitigation plan

### Supporting Documentation

links to documents, spreadsheets, issues, etc.

## Teams GA - Features

### Problem Statement

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@snankani
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### Measuring Success

dashboards, KPIs, and other indicators of success for this epic

### Definition of Done (List of Features making this EPIC)

- Spikes on Dotcom side
- Spikes on Teams side
- Work with new owner of scheduled reminder on the design/ approach closure
- DB changes. (and reactionary code changes to make sure existing functionality is not regressed)
- API changes on dotcom side (Workspace, personal reminder)
- API changes on dotcom side (reminder).
- Changes to hide real time alerts in personal reminder when teams is selected.
- [Dotcom UI] make sure scheduled reminders pointing to teams do not show up in dotcom UI
- Schedule command (org scope)
- Schedule command (personal scope)
- Schedule list command
- Teams integration side changes to post schedule reminder messages
- Enable 'org:members' permission for Teams for GitHub app.
- BugBash for Teams GA features
- reminder telemetry changes
- Misc
- Publish Updated app manifest
- Supporting delete events in personal scope.
- update exec sponsor in dotcom repo
- All hands demo for Teams GA features.

### Risks

### Findings:

- can chatops service get list of orgs which user is part of?
- can chatops service get list of admins of an org? OR can chatops service tell if a user is admin of an org or not?
- List organization memberships for the authenticated user api can provide the list of orgs. The response also contains user role in the organisation, member/admin.
- List organisation member api can be used to list org admins, it would require the query param 'role=admin' to fetch only admins
- can chatops service get list of admins of a github team? OR can chatops service tell if a user is admin of an org or not?
- List Team members api with query param 'role=maintainer' give list of maintainers for a GitHub Team.
- Get team membership for a user api can give us the details of user role in the team.
- given an user and org, can chatops service figure out which all teams the user is admin of?
- There is no single api that can provide this information, the list teams for authenticated user api does list all teams user is part of and have a 'permission' field, but according to Dotcom code "The permission attr is a legacy value." and hence the value can not be relied on.
- can chatops service get details of org to display what all reminder will go and what all will not? example: for free org only reminder from public repos flow to user
- Get an Org Api also returns the plan details for the org, we would require a mapping of different plans to understand when to show which message to user.
- can chatops team search teams/ repos inside an org on behalf of user? to give the experience in reminder creation flow where user selects from list of repos/ teams.
- We can use the Search Api to search for repositories inside an org by constructing a query with org. Accessible through integration app. Example: <https://api.github.com/search/repositories?8q=query> where query is url encoded and something like this 'calc-lib inname user:protocolRedefined'
- No search present for searching teams.
- Max 100 per page

Changes to use existing features:

gauravsaralM commented on 15 Jan · edited ·

### Problem Statement

This feature will complete creating personal schedule reminder through command from teams.

### Definition of Done

- Personal Schedule Reminder

Tasks	Time	Dependencies	Description
Happy flow(Figuring out the APIs' required, writing handlers for create/update/delete reminder )	2 days	Personal APIs	
Error handling	1 day		Share details of kind of errors with Ashok/Vivek to get the error messages and adaptive/message UX.
Writing UTs	2 days		
Bug Bash			
Fix bugs			

### Prerequisites

Dotcom should be set-up locally.

### Project Date of completion

29th Jan 2021

cc: @ashokirla @gauravsaralM, @snankani

## Adding setting column in reminder table #166877

Merged | jennes merged 5 commits into master from users/gsara/addSettingColumnToReminderTable on 15 Jan

Conversation 15 · Commits 5 · Checks 24 · Files changed 3



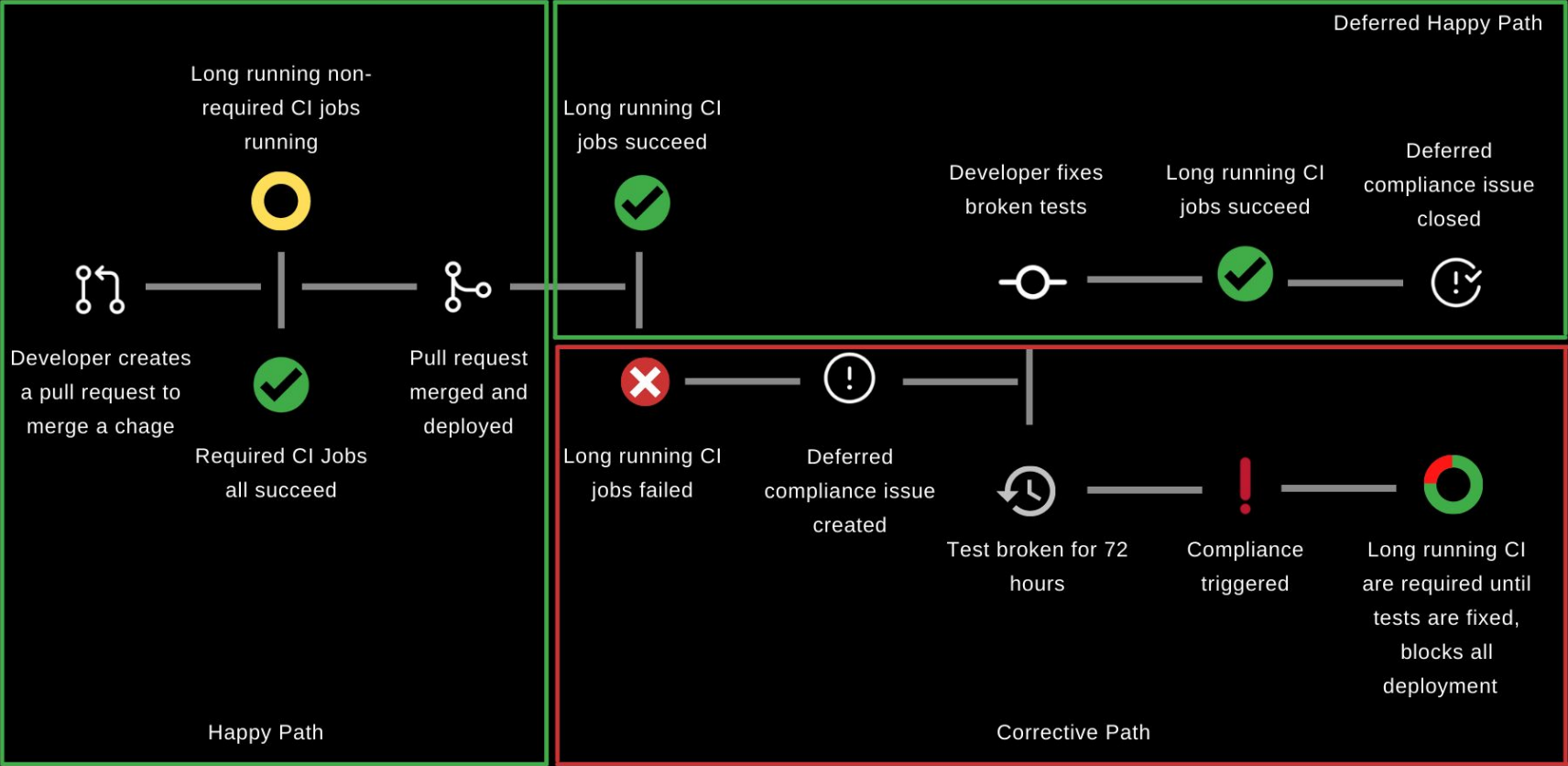
gauravsaralM commented on 6 Jan · edited ·

To support MS Teams integration for scheduled reminder at org/team level, there is a need to store service url, for this proposal is to add a blob type column for any misc. settings that can be required for any future integrations as well.

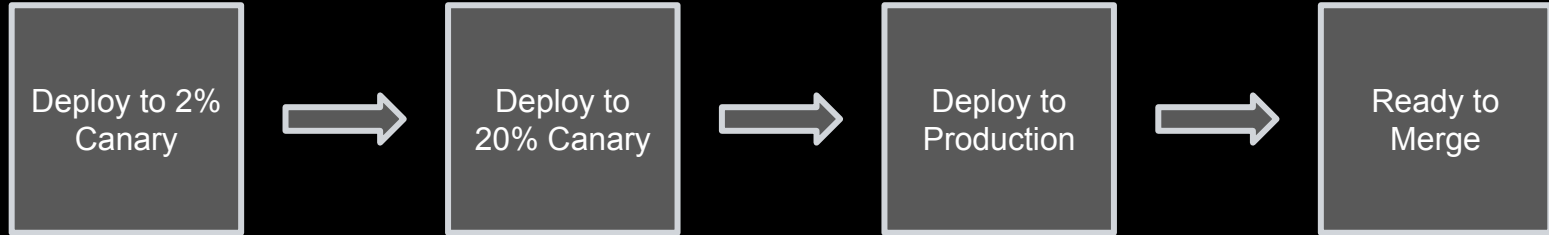
This column will be used to store service url for teams (and in future if we onboard more chatOps client) and then we can use this column to store anything specific to those clients.



# PR Process



## Safe Rollout



Automated timer between each stage to give developers times to test their changes.  
If something goes wrong, they can quickly block progression, rollback, or lock deploys

# Operate - Monitor, Alert, SLO

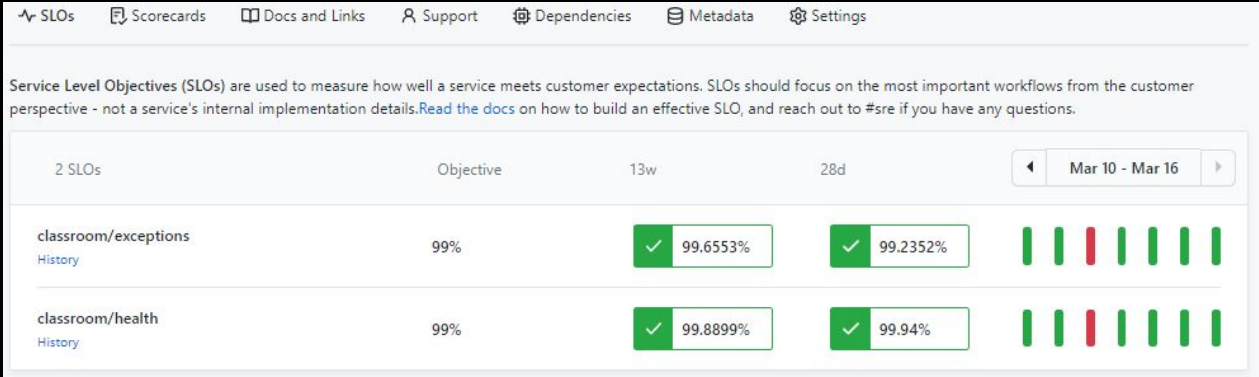
Monitor



Alert



SLO



## Next Focus Areas

- Continuous Improvements
- Using GitHub to build GitHub
- Development parity among GitHub SKUs

## **Key Takeaways**

- **Automation and processes to improve engineer productivity & experience**
- **Create transparency to build trust, community, inner sourcing**
- **Measure what matters for continuous improvement**

# Engineering Blog on Building GitHub

[Building GitHub: introduction - The GitHub Blog](#)

[Making GitHub CI workflow 3x faster - The GitHub Blog](#)

[Improving how we deploy GitHub - The GitHub Blog](#)

[Deployment reliability at GitHub - The GitHub Blog](#)

