

# Helm Charts Quality Analysis

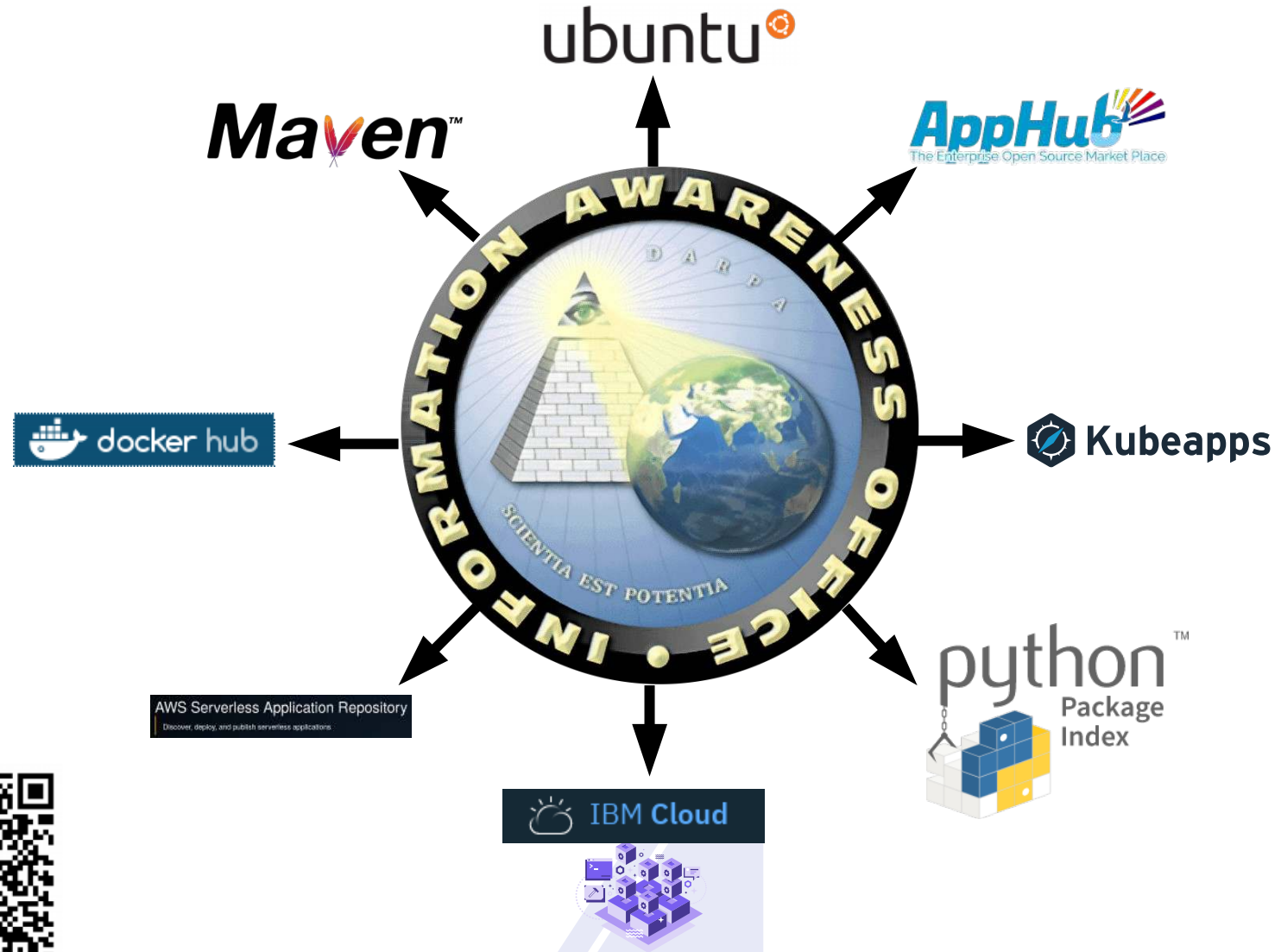


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June 26, 2018 | Future Cloud Applications | Zurich

# Artefact Repositories

The backbone of today's (cloud) software development



# Quality Assurance in Repositories

Example: Debian QA → Tracker (*tracker.debian.org*; pre-2016: *packages.qa.debian.org*)



## golang-github-docker-engine-api

client and server components compatible with the Docker engine

Jump to package... Go

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### general

**source:** [golang-github-docker-engine-api](#)  
(main)  
**version:** 0.4.0-3  
**maintainer:** [Debian Go Packaging Team](#)  
(archive) [DMD]  
**uploaders:** [Dmitry Smirnov](#) [DMD] - [Tim Potter](#) [DMD]  
**arch:** all  
**std-ver:** 3.9.8  
**VCS:** [Git](#) ([Browse](#), [QA](#))

### versions

**unstable:** 0.4.0-3

### versioned links

**0.4.0-3:** [📄](#) [📦](#) [🔍](#) [🔗](#)

### binaries

[golang-github-docker-engine-api-dev](#)

### action needed

- Standards version of the package is outdated. high
- The package has not entered testing even though the delay is over normal
- A new version is [available in the VCS](#), consider uploading it. normal
- lintian reports [3 warnings](#) normal

### testing migrations

- excuses:
- Migrates after: [docker-registry](#)
  - 106 days old (5 needed)
  - Updating golang-github-docker-engine-api introduces new bugs: [#871654](#)
  - Piuparts tested OK - <https://piuparts.debian.org/sid/source/g/golang-github-docker-engine-api.html>
  - Not considered

### news

- [2018-02-16] Accepted golang-github-docker-engine-api 0.4.0-3 (source) into unstable (Michael Stapelberg)
- [2017-08-09] Accepted golang-github-docker-engine-api 0.4.0-2 (source all) into unstable (Konstantinos Margaritis)
- [2017-01-29] golang-github-docker-engine-api REMOVED from testing (Debian testing watch)
- [2016-10-05] golang-github-docker-engine-api 0.4.0-1 MIGRATED to testing (Debian testing watch)
- [2016-09-30] Accepted golang-github-docker-engine-api 0.4.0-1 (source all) into unstable (Tim Potter) (signed by: Timothy Potter)
- [2016-05-19] golang-github-docker-engine-api 0.3.3-1 MIGRATED to testing (Debian testing watch)
- [2016-05-17] golang-github-docker-engine-api REMOVED from testing (Debian testing watch)
- [2016-04-28] golang-github-docker-engine-api 0.3.3-1 MIGRATED to testing (Debian testing watch)
- [2016-04-22] Accepted golang-github-docker-engine-api 0.3.3-1 (source all) into unstable (Dmitry Smirnov)
- [2016-03-15] golang-github-docker-engine-api 0.2.3-1 MIGRATED to testing (Debian testing watch)
- [2016-03-09] Accepted golang-github-docker-engine-api 0.2.3-1 (source all) into unstable, unstable (Dmitry Smirnov)

### bugs

**all:** 1  
**RC:** 1  
**I&N:** 0  
**M&W:** 0  
**F&P:** 0

### links

[homepage](#)  
[lintian](#) (0, 3)  
[build: logs, clang](#)  
[popcon](#)  
[debci](#)  
[browse source code](#)  
  
[edit tags](#)

### ubuntu

**version:** 0.4.0-3



# The Idea: HelmQA

## Helm: Package manager for the cloud-native landscape



Created in 2015 as a Deis (now MS) installer

Out of K8s incubator in 2017

80 stable charts, 53 maints

KubeApps UI/marketplace in 2017

Helm summit in February 2018 with 179 participants (out of 250)

CNCF top-level (incubator) project since May 2018

177 stable charts, 142 maints

50k montly downloads

>30k charts on Github/similar?

Quality checks (v2.8): *helm lint*

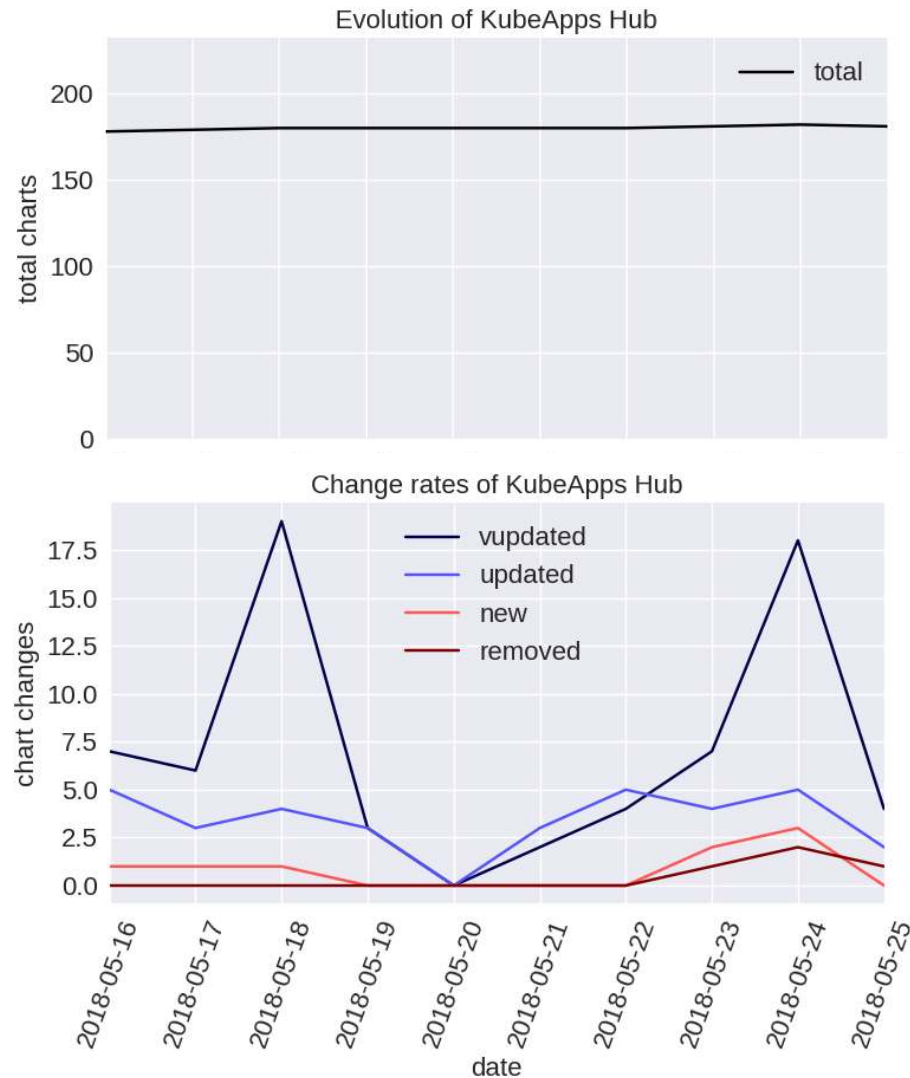
»This command takes a path to a chart and runs a series of tests to verify that the chart is well-formed.«

sufficient?

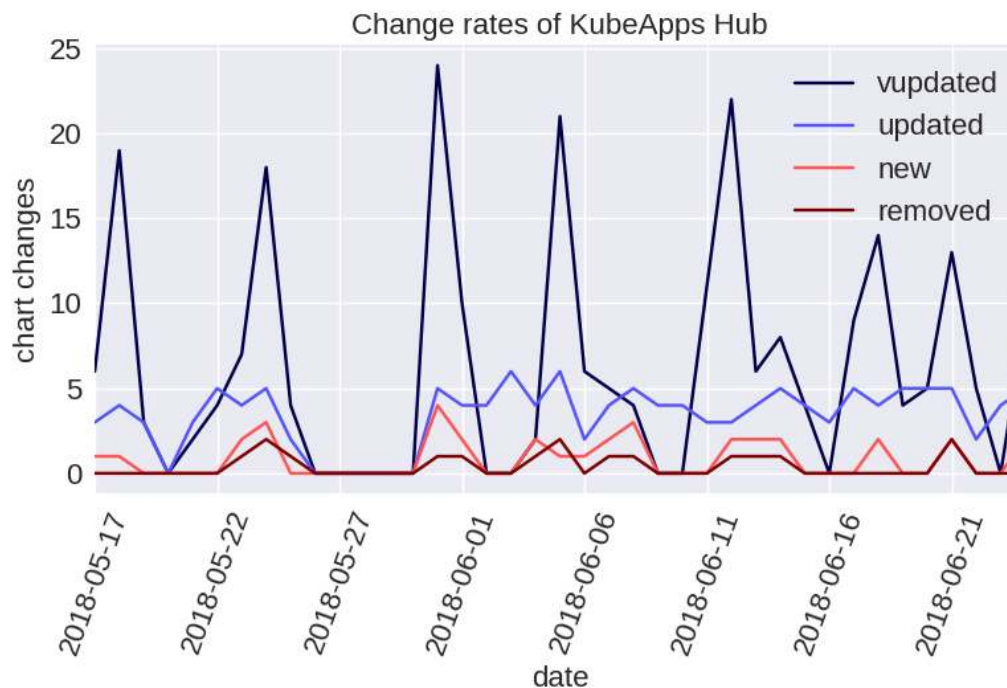
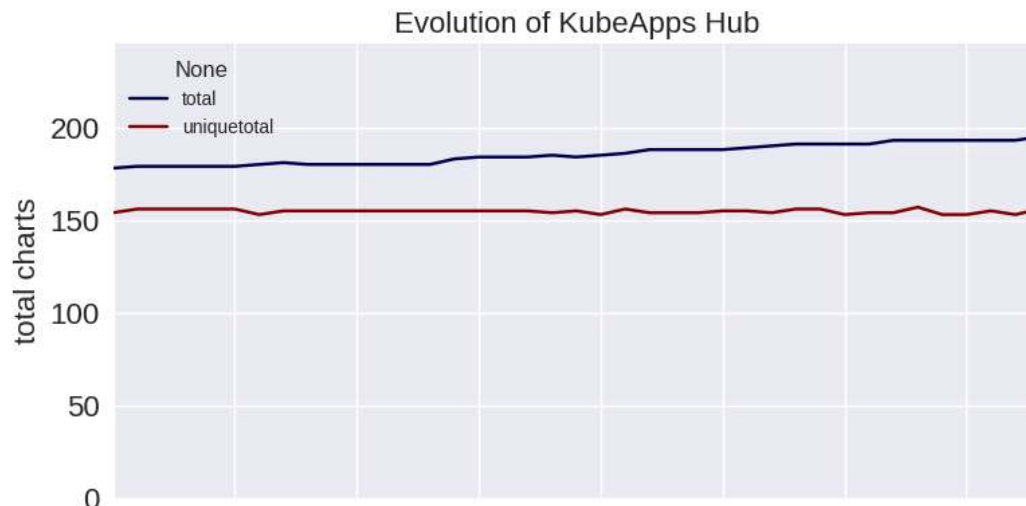


# Initial Statistics

When work was started... (presented at Open Cloud Day 2018)



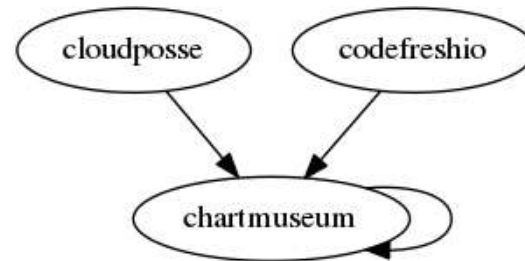
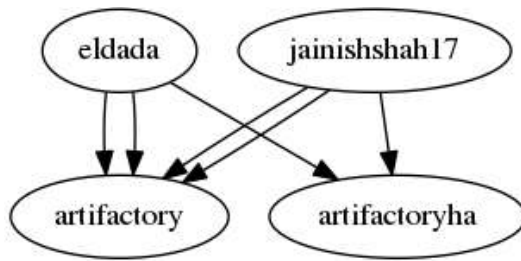
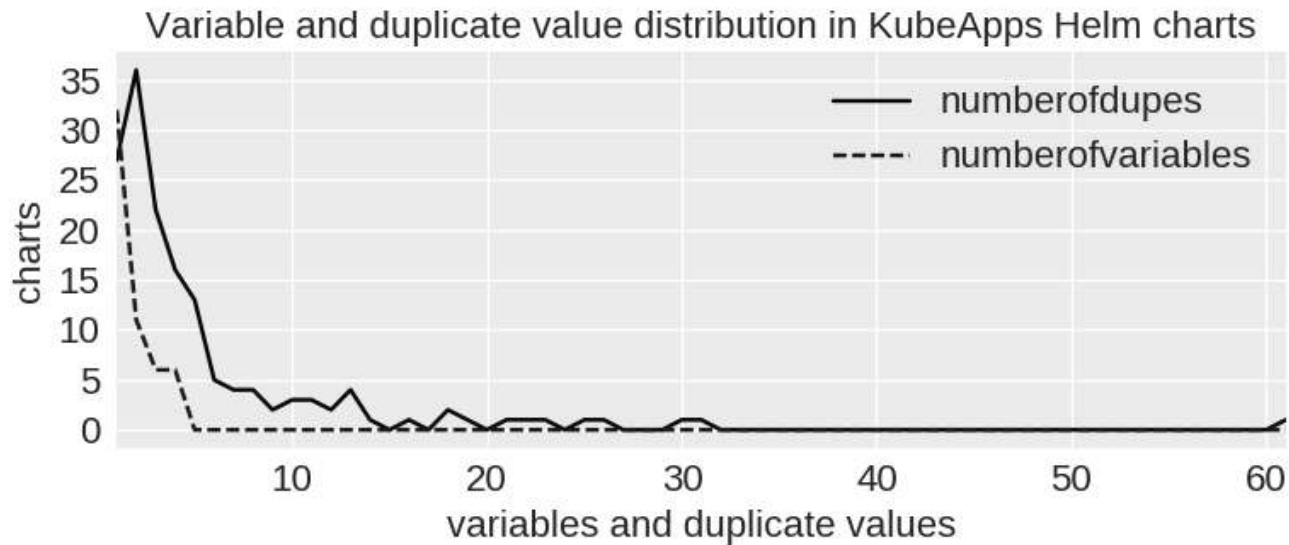
# Evolved Statistics





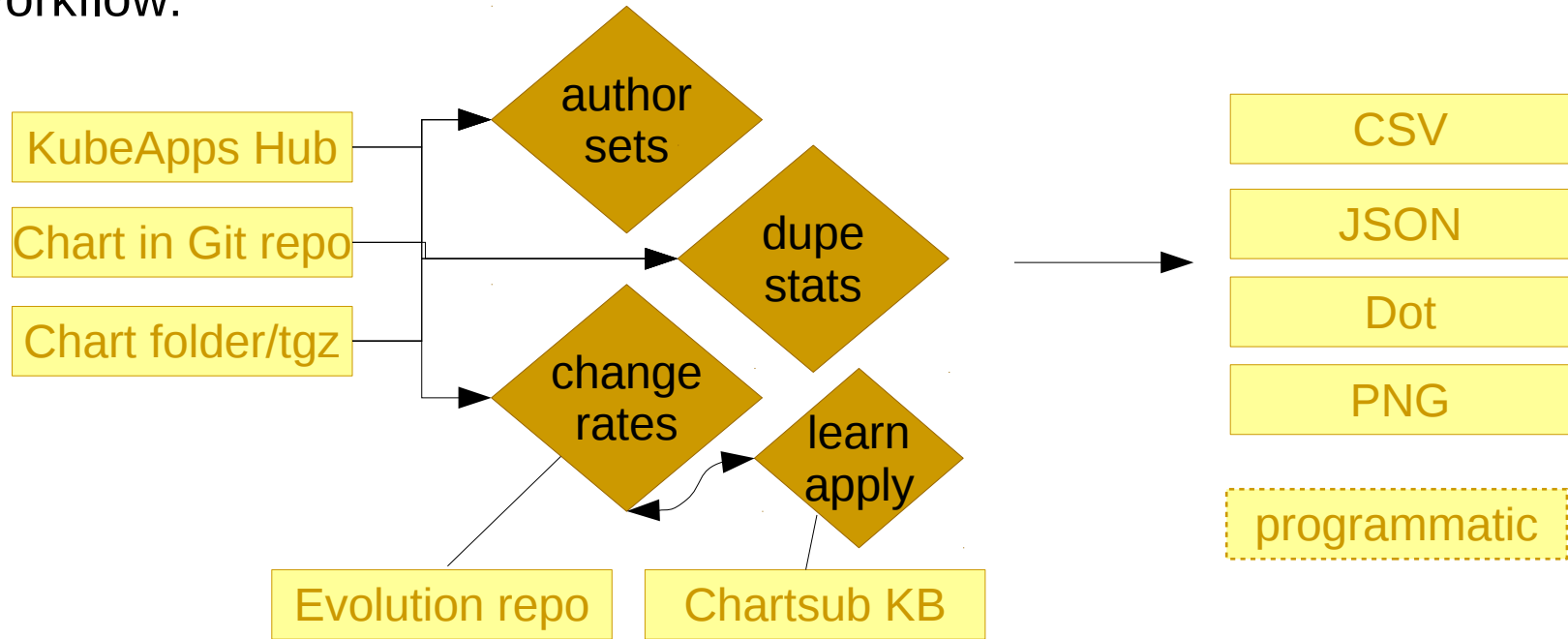
# More Statistics

## Quality perspective



# HelmQA Implementation

Workflow:



Technologies:

- Python, Bash, Git
- Docker, OpenShift, Helm

(still plenty of scripts... ~1500 SLOC)





# HelmQA Web Frontend

HelmQA by Service Prototyping Lab, Zurich University of Applied Sciences  
Follow the links to per-chart quality reports.

<http://helmqa-zhaw-hendu.appuioapp.ch/>

[aerospike-0.1.7.tgz](#)  
[anchore-engine-0.1.7.tgz](#)  
[artifactory-5.4.6-3.tgz](#)  
[artifactory-7.1.5.tgz](#)  
[artifactory-ha-0.1.9.tgz](#)  
[bitcoind-0.1.3.tgz](#)  
[buildkite-0.2.3.tgz](#)  
[burrow-0.4.3.tgz](#)  
[centrifugo-2.0.1.tgz](#)  
[cert-manager-0.2.9.tgz](#)

HelmQA advice on chart traefik-1.1.0-a.tgz / data point 2018-05-31

**Issue: multiple:traefik-1.9.0.tgz,traefik-1.1.2-h.tgz,traefik-1.2.1-b.tgz,traefik-1.1.1-a.tgz,**

Explanation:

Two or more versions of the same chart appear in the same repository.

Rationale:

Developers may not understand which version to use.

Recommended action:

Unless there are compelling technical reasons, the advice is to stick to a single version per category.

**Issue: duplicatevalues**

Explanation:

The templates contain values with at least two duplicates which are candidates for template variables.

Rationale:

Configuration duplication should be avoided. While false positives may occur, in some cases they are necessary.

Recommended action:

Review the list (and if available, the suggested diff) to decide which duplicates should be removed. The following occurrences of duplicate values have been found. Each entry consists of the value and the number of occurrences. The following occurrences of duplicate values have been found. Each entry consists of the value and the number of occurrences. The following occurrences of duplicate values have been found. Each entry consists of the value and the number of occurrences.

[diff sketch available](#)



# Initial Feedback

Interesting idea, thanks for reaching out with suggestions.

Thanks for your note. I'll be interested to see your bot's suggestions when they are available.



**Matt Fisher** @bacongobbler · Jun 21

Oh awesome! I just posted a link to the team. Looks like a great project! I just bumped into a few of these issues last night.



**Matt Fisher** @bacongobbler · Jun 21

Replying to @S\_P\_Lab @HelmPack  
any chance this is open source? :)



1



.....  
yes it is...



# Release of HelmQA code

serviceprototypinglab / **helmqa** Unwatch 1 Star 0 Fork 0

Code Issues 0 Pull requests 0 Projects 0 Wiki Insights Settings

Quality assurance for Helm charts and chart repositories [Add topics](#) [Edit](#)

9 commits 1 branch 0 releases 0 contributors

Branch: master New pull request Create new file Upload files Find file Clone or download

**spio** - new feature: time series of unique (unversioned) charts in contrast... Latest commit 9f1c4fd 16 hours ago

<a href="#">.gitignore</a>	- kind of multiviews matching of different chart versions	7 days ago
<a href="#">Dockerfile</a>	- addition of missing tool	7 days ago
<a href="#">INSTALL</a>	- initial import of HelmQA scripts ("raw meat edition")	14 days ago
<a href="#">README</a>	- initial import of HelmQA scripts ("raw meat edition")	14 days ago
<a href="#">TODO</a>	- initial import of HelmQA scripts ("raw meat edition")	14 days ago
<a href="#">applyvariability.py</a>	- initial import of HelmQA scripts ("raw meat edition")	14 days ago
<a href="#">authorsets-email-plot.py</a>	- initial import of HelmQA scripts ("raw meat edition")	14 days ago
<a href="#">authorsets.py</a>	- basic containerisation	9 days ago
<a href="#">buckets.py</a>	- initial import of HelmQA scripts ("raw meat edition")	14 days ago



# What's Next

More feedback on auto-generated suggestions + diffs to maintainers

Full publication with all details to be submitted around mid-August 2018  
(preprint will be publicly available @ arXiv)

Workflow integration (e.g. for APPUiO deployments)

- API: e.g. [/livecheck/github.com/appuio/charts](https://livecheck.github.com/appuio/charts)
- long-term: plugin to “helm lint” and policy enforcement within “kubeapps”?



More metrics, e.g. absence of source URL  
Going back to “similarity” index

Getting mandate from  
Swiss businesses!

