

]u[repositories architecture: Highly scalable Hyku in the cloud

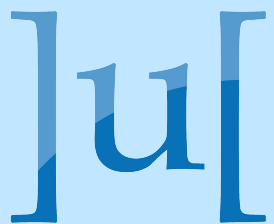
]u[**ubiquity press**
open scholarship



Agenda

- > Ubiquity Repositories components
- > 12 factors
- > Plugins and customisation
- > Q&A





Working in partnership to make research open to the world

Shared Research Repository

LIBRARY HISTORIC Research Repository BETA

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 <p>RESEARCH REPORT</p> <p>A Geology of the British Library</p> <p>Robinson, Eric</p> <p>Eric Robinson, consultant to Sir Colin Wilson, the architect of the British Library, and a former University College London lecturer and urban geologist produced a free B...</p>	<p>EXHIBITION OBJECT LABELS</p> <p>Karl and Eleanor Marx – Life in the Reading Room (Exhibition label text)</p> <p>Siclován, Diana</p> <p>2018 marked the birthday of political philosopher Karl Marx. In connection with the anniversary, the British Library Treasures Gallery display 'Karl and Eleanor – Life in the...</p>	 <p>CONFERENCE PAPER (PUBLISHED)</p> <p>Preservation planning for emerging formats at the British Library</p>
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Pacific University Oregon Research Repository BETA

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CommonKnowledge is the home of the collected scholarship and creative works of Pacific University faculty, staff and students - and of their collaborators from around the world.

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Featured Collections

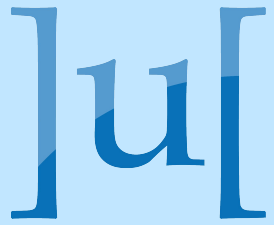
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COLLECTION	COLLECTION
Sociology Anthropology & Government Work	History

Recent Additions

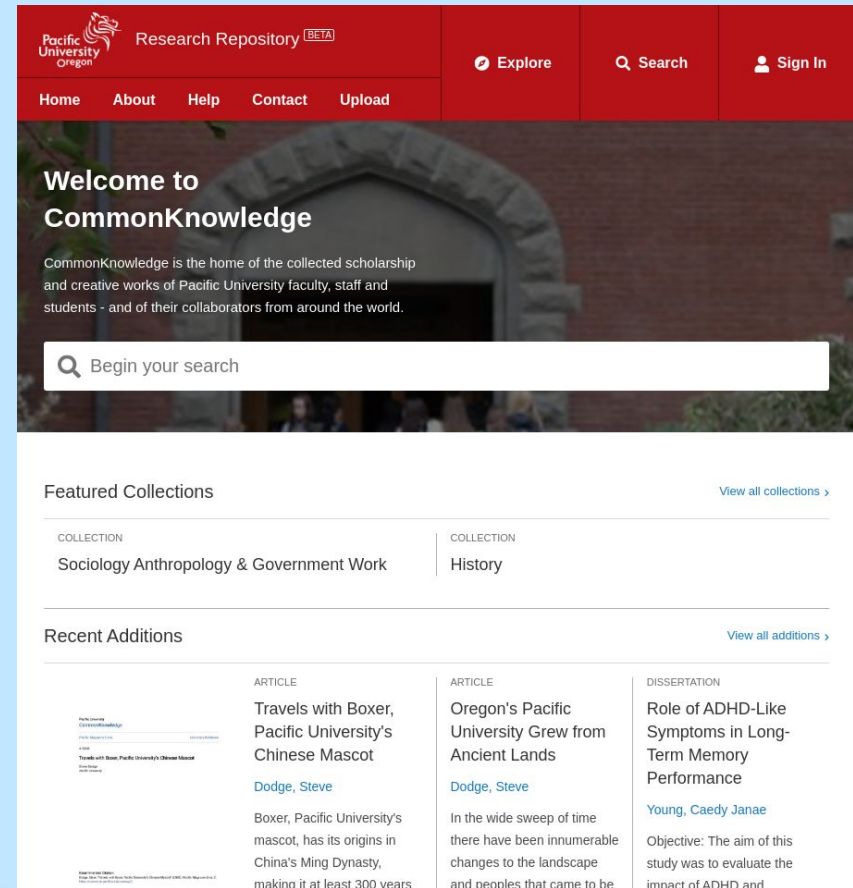
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 <p>ARTICLE</p> <p>Travels with Boxer, Pacific University's Chinese Mascot</p> <p>Dodge, Steve</p> <p>Boxer, Pacific University's mascot, has its origins in China's Ming Dynasty, making it at least 300 years</p>	<p>ARTICLE</p> <p>Oregon's Pacific University Grew from Ancient Lands</p> <p>Dodge, Steve</p> <p>In the wide sweep of time there have been innumerable changes to the landscape and peoples that came to be</p>	<p>DISSERTATION</p> <p>Role of ADHD-Like Symptoms in Long-Term Memory Performance</p> <p>Young, Caedy Janae</p> <p>Objective: The aim of this study was to evaluate the impact of ADHD and</p>
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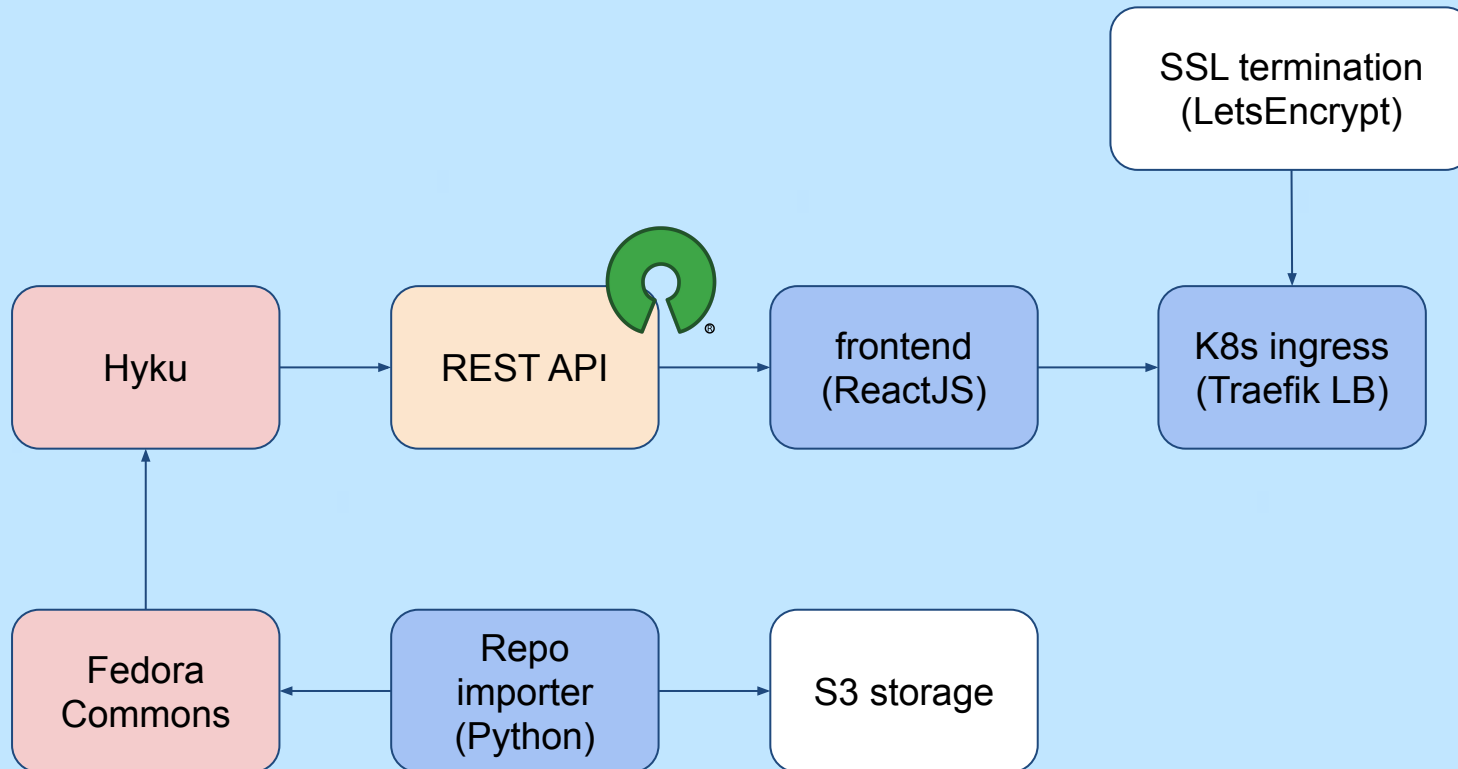


Working in partnership to make research open to the world

- British Library
- National Museum of Scotland
- Museum of London Archaeology
- The British Museum
- Tate Galleries
- Kew Gardens
- Pacific University (Oregon)



Hyku/Hyrax in the cloud: Ubiquity components



Maintained by UP

Maintained by Samvera

External service

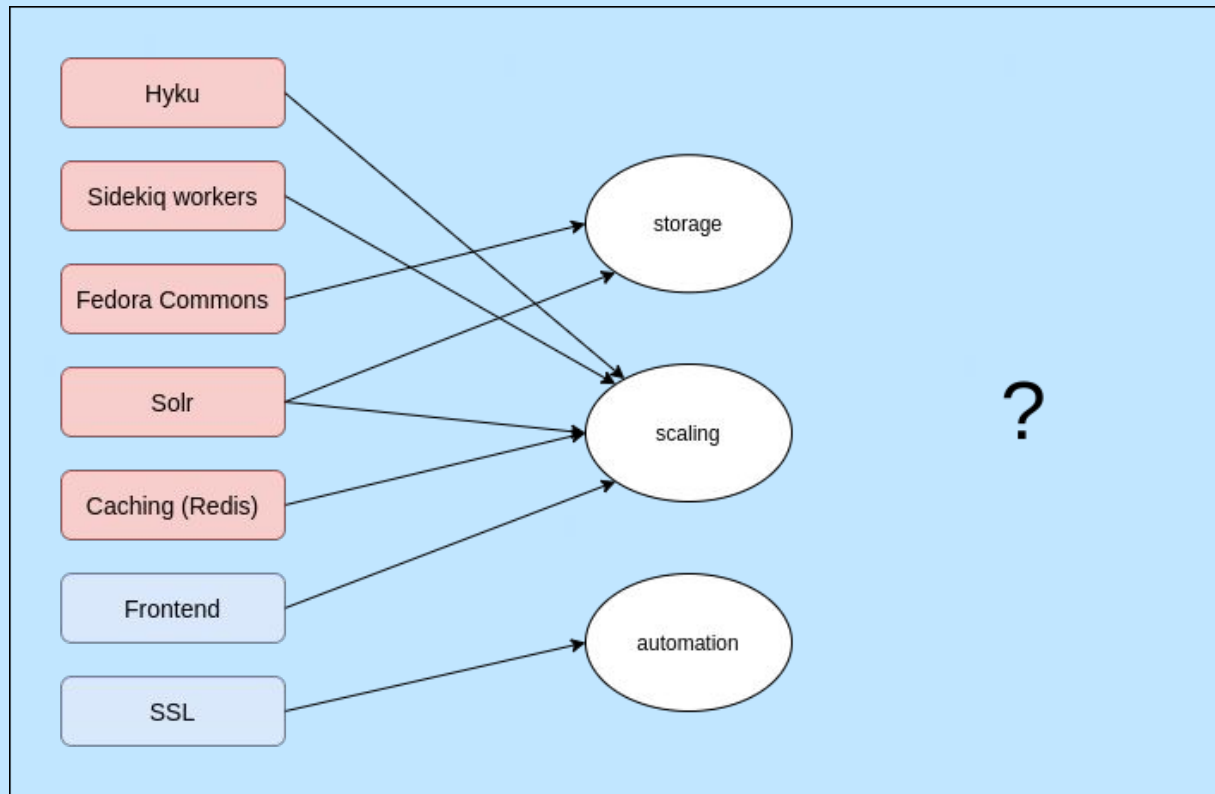
Hyku/Hyrax in the cloud: Ubiquity components

State of the conversation:

- Samvera 2020: Tom Johnson's "[Hyraxes make their homes among the clouds](#)"
- Github PR on samvera/hyrax "[Helm charts for Hyrax and FCRepo #4496](#)"
- Meets the "Architecture review" document (Rathin Sundar for Advancing Hyku)
<https://bl.iro.bl.uk/work/b0f15cfa-8873-47aa-b0a1-30fb9d8a1540>

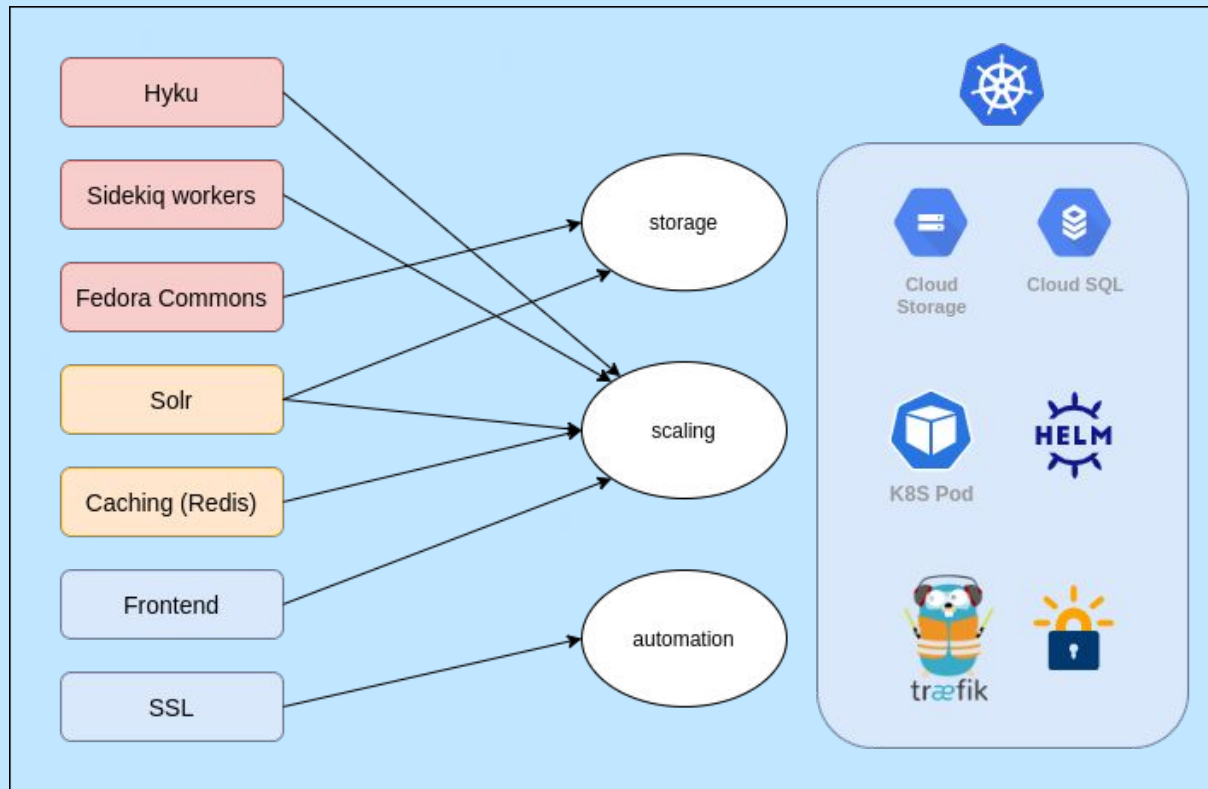
Hyku/Hyrax in the cloud: Ubiquity components

Hyku components



Hyku/Hyrax in the cloud: Ubiquity components

Hyku components



Hyku/Hyrax in the cloud: 12 Factor App Methodology

<https://12factor.net> by Heroku and Cloud Foundry

3. Configuration (k8s configmaps)

10. Dev/prod parity

4. Backing services (k8s services)

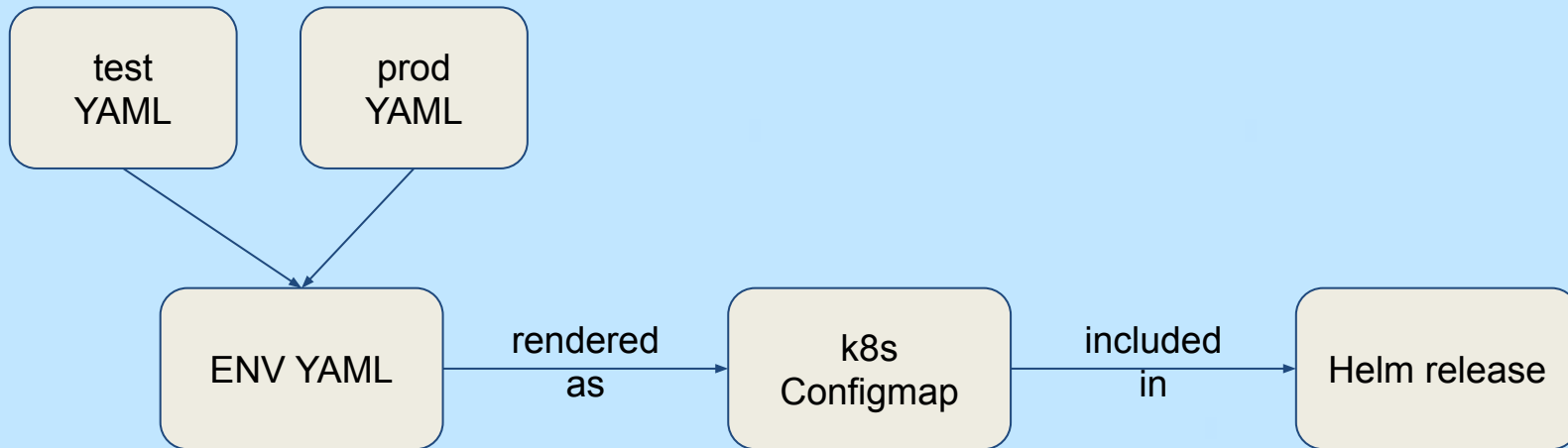
7. Port binding (Backend services + frontend services)

5. Build / release / run (GitLab / Helm / k8s)

8. Concurrency and scaling (Horizontal and Vertical Pod Autoscaler)

11. Logs & visibility (Google Stackdriver + Sentry)

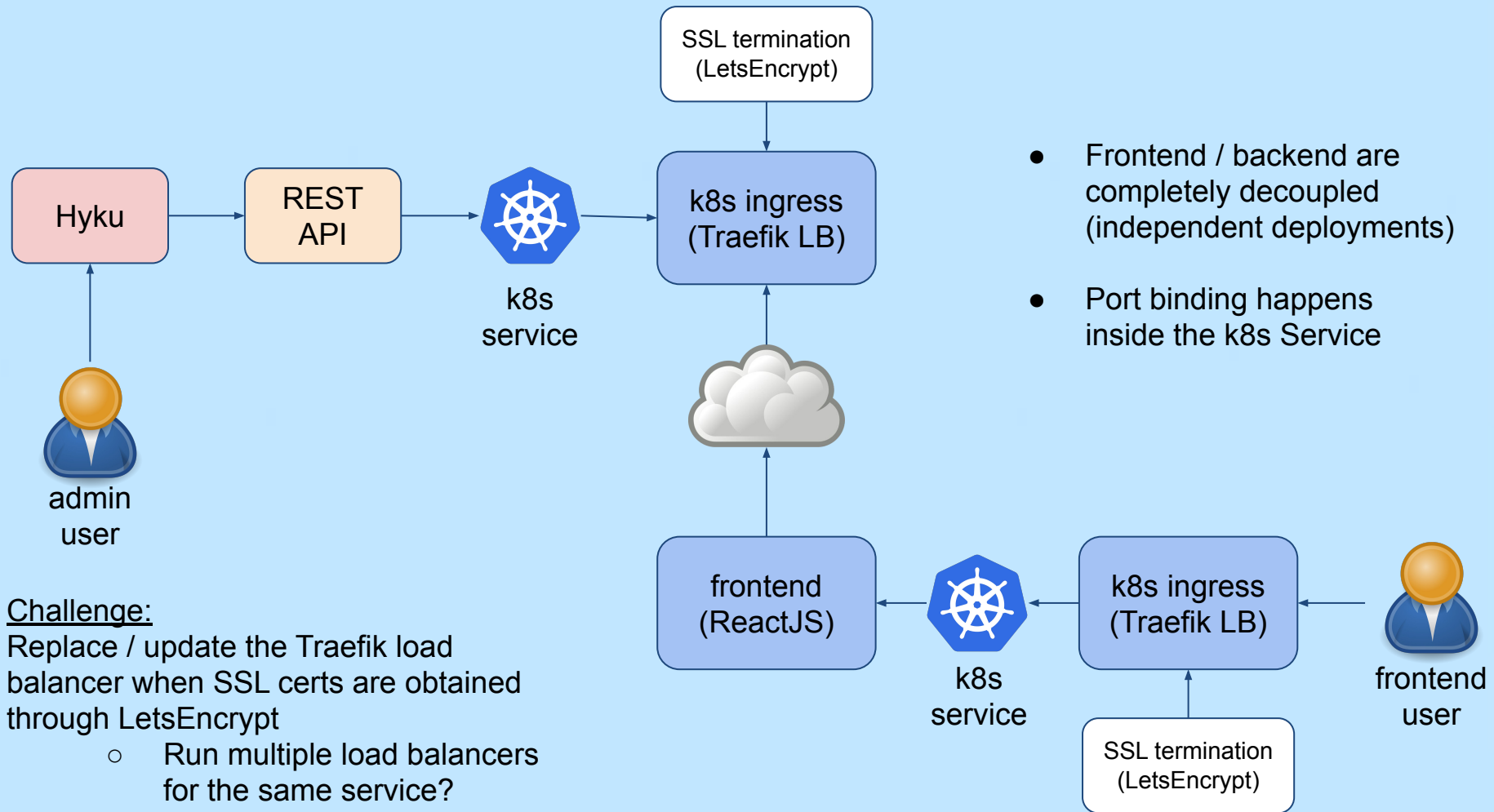
Hyku/Hyrax in the cloud: 3+10 - Configuration



Challenges:

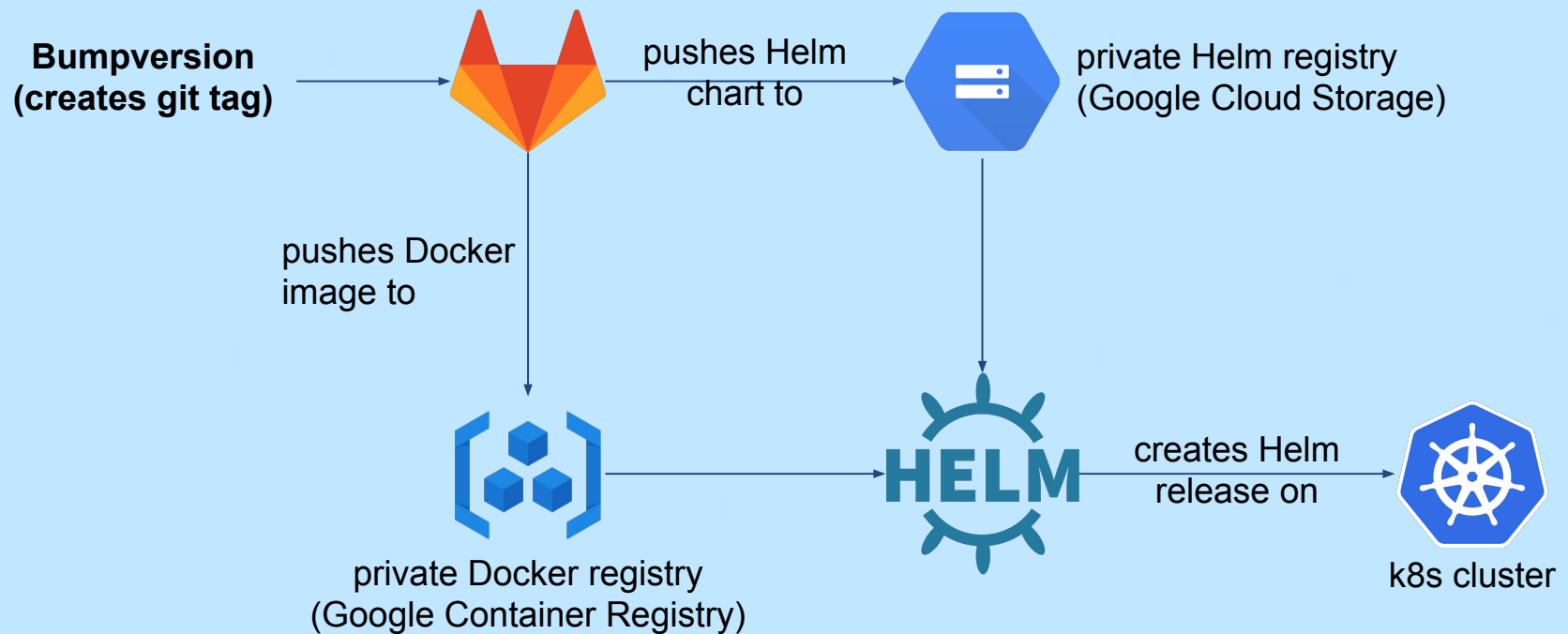
- upgrade from Helm 2 to Helm 3
- we started running Hyku on k8s 1.11 -- API upgrades on 1.16 meant that we had to use Helm-mapkubeapis (<https://github.com/hickeyma/helm-mapkubeapis>)

Hyku/Hyrax in the cloud: 4+7 - Services and ports

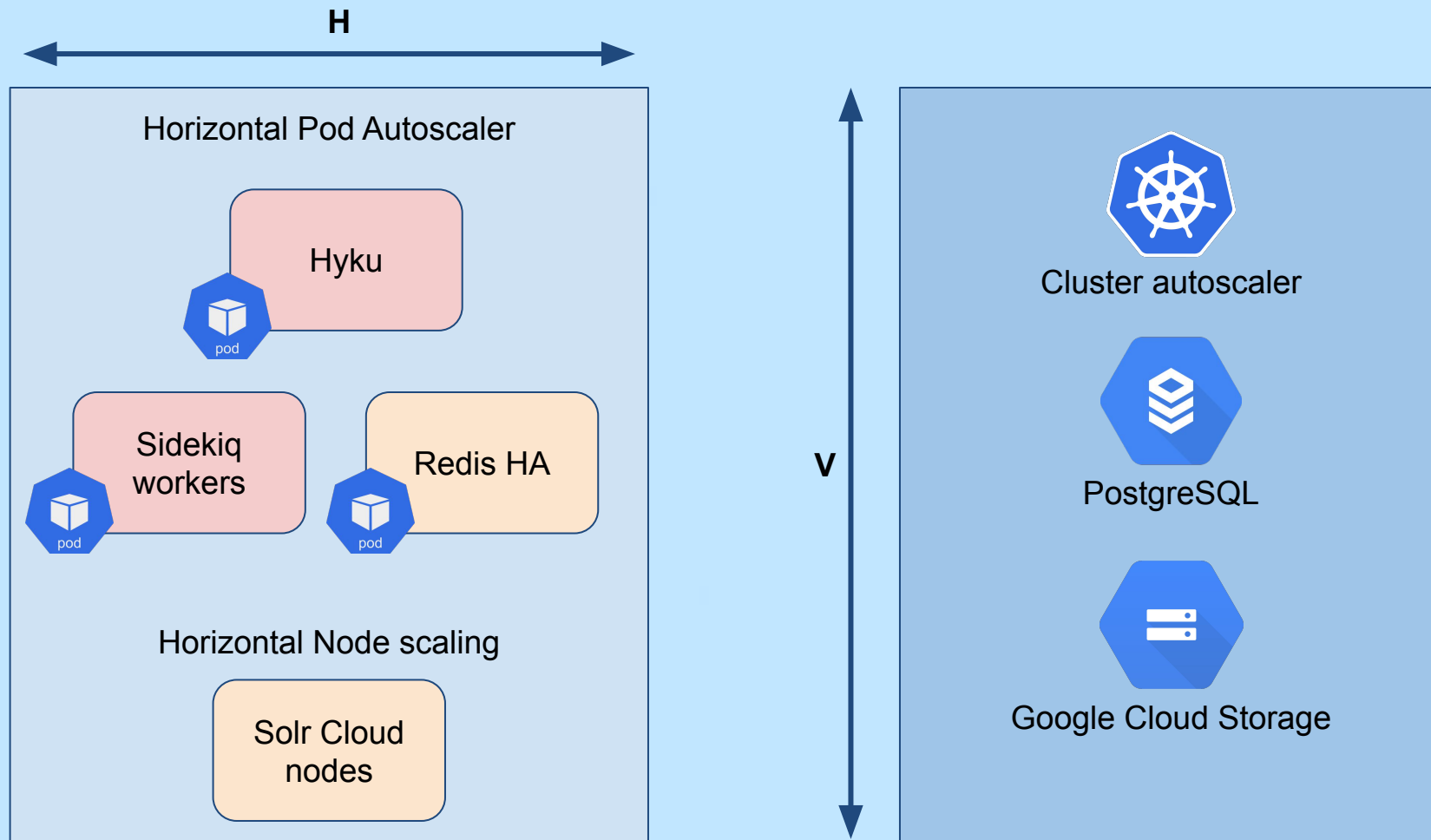


Hyku/Hyrax in the cloud: 5 - Build / release / run

AKA GitLab / Helm / Kubernetes



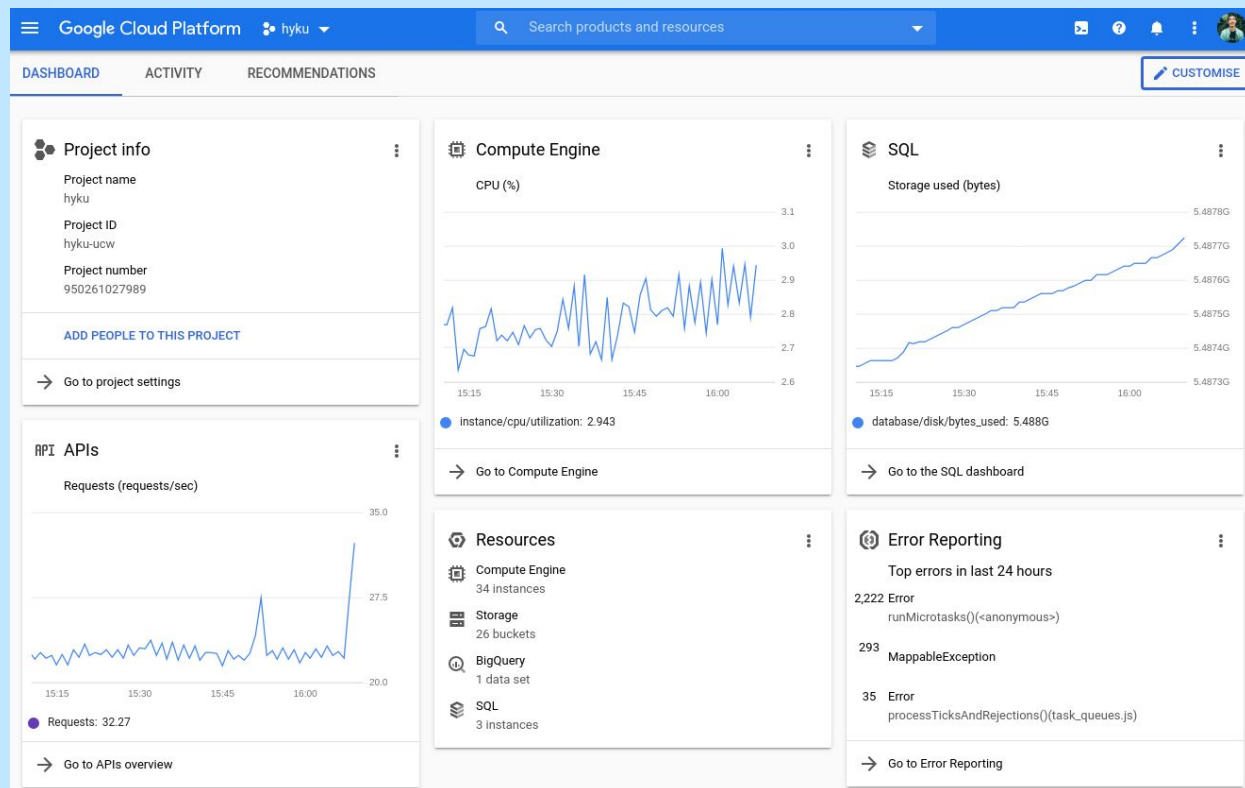
Hyku/Hyrax in the cloud: 8 - Concurrency & scaling



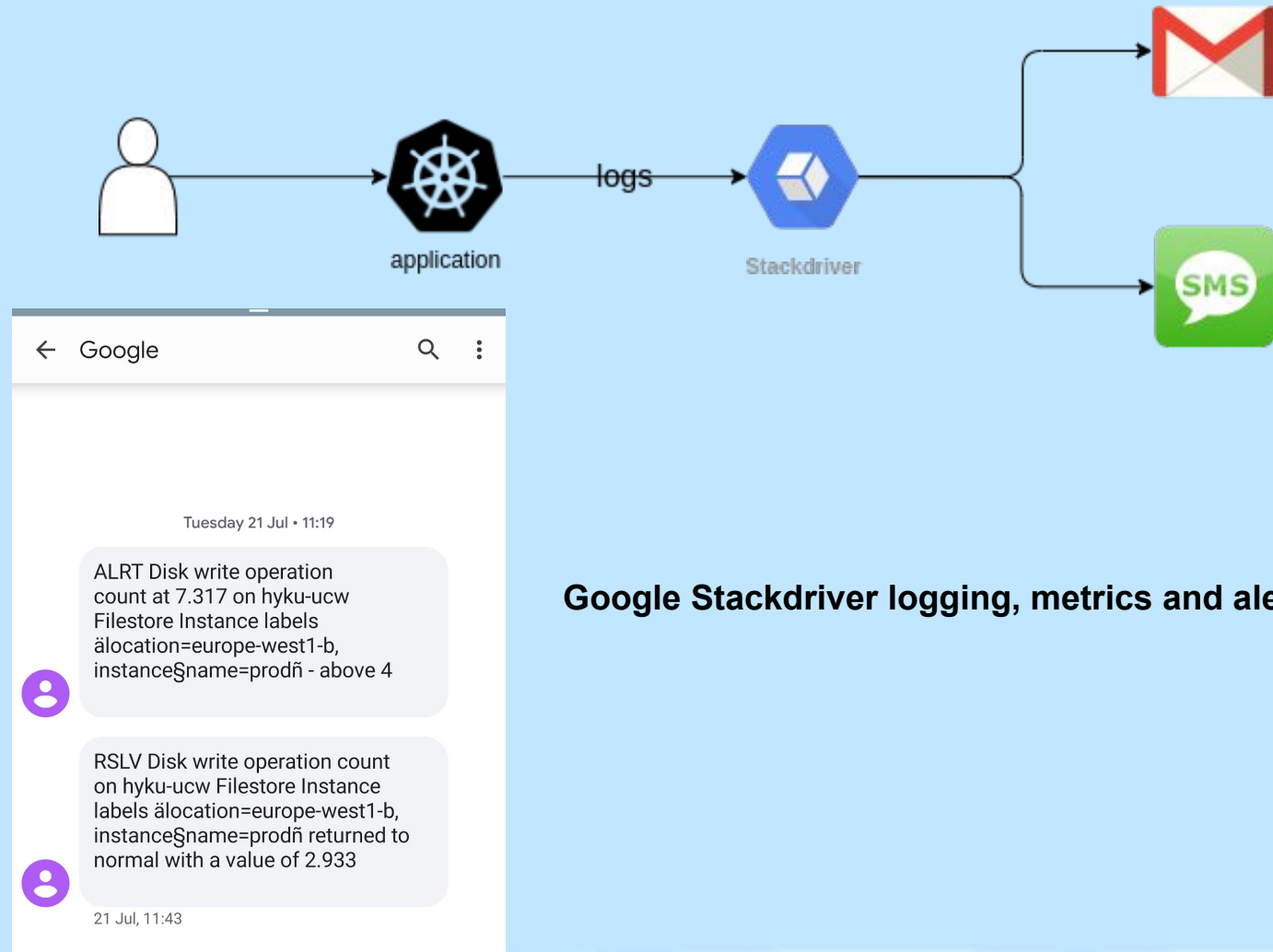
Hyku/Hyrax in the cloud: 11 - Logs & visibility

Uptime **99.99%+** in last 12 months

Monitoring on
Google Stackdriver



Hyku/Hyrax in the cloud: 11 - Logs & visibility



Google Stackdriver logging, metrics and alerting

Hyku/Hyrax in the cloud: 11 - Logs & visibility



repository repository

Issues Overview User Feedback Releases Settings

ArgumentError Ubiquity::CitationExportsController#export_to_rif

Couldn't find ActiveFedora::Base without an ID

ruby

Resolve Ignore Star

Details Comments 0 User Feedback 0 Tags Events Merged

Event [f3c108b9874540c88dd729ea4f8b2e5e](#)

Jul 29, 2020 5:40:37 PM UTC | [JSON \(37.8 KB\)](#)

There was 1 error encountered while processing this event

10.40.6.6

Firefox Version: 58.0

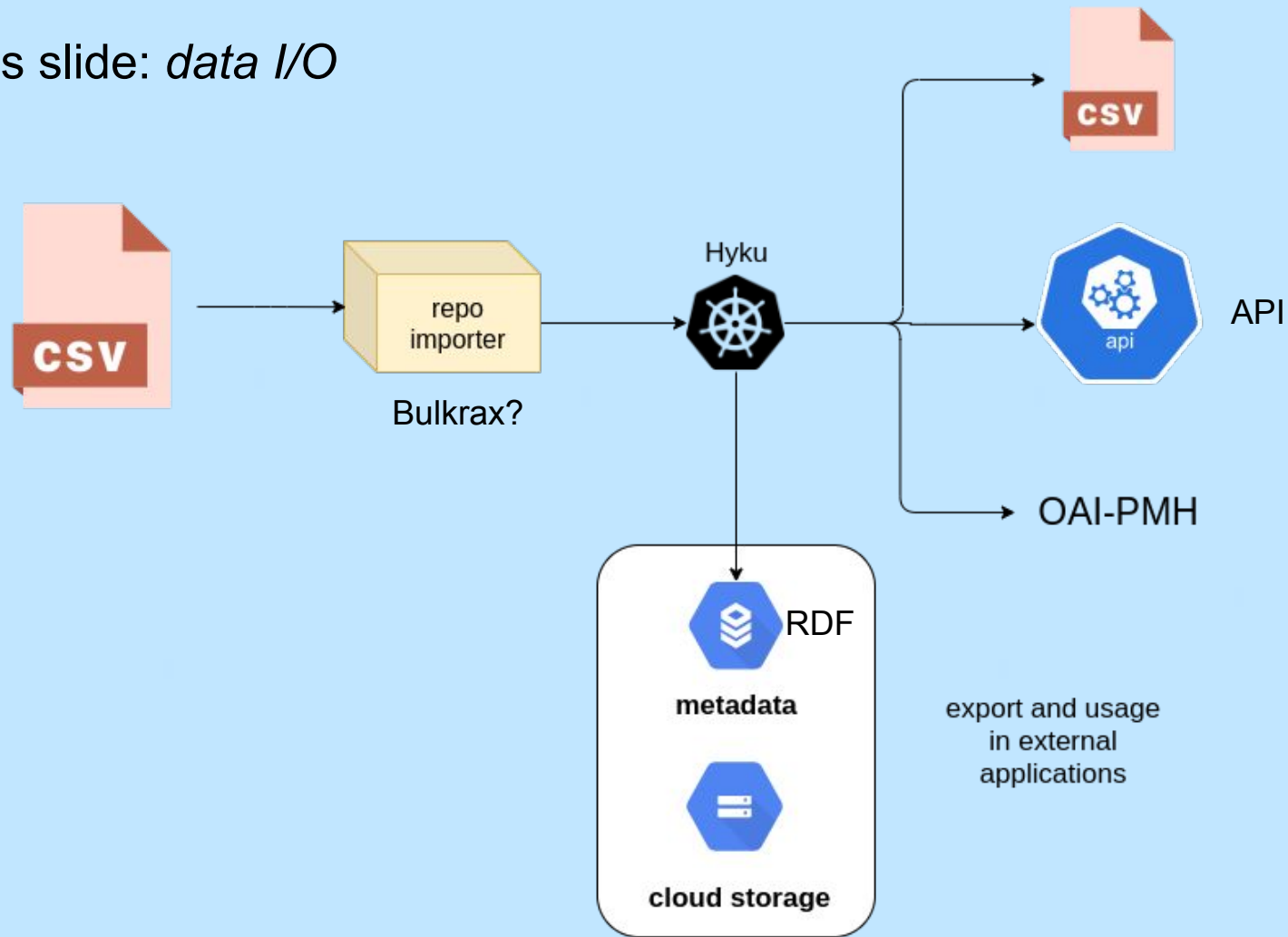
Ubuntu Version: Unknown

TAGS

browser Firefox 58.0 browser.name Firefox environment production level error logger ruby os.name Ubuntu server_name hyku-5495d6bc99-m42z6

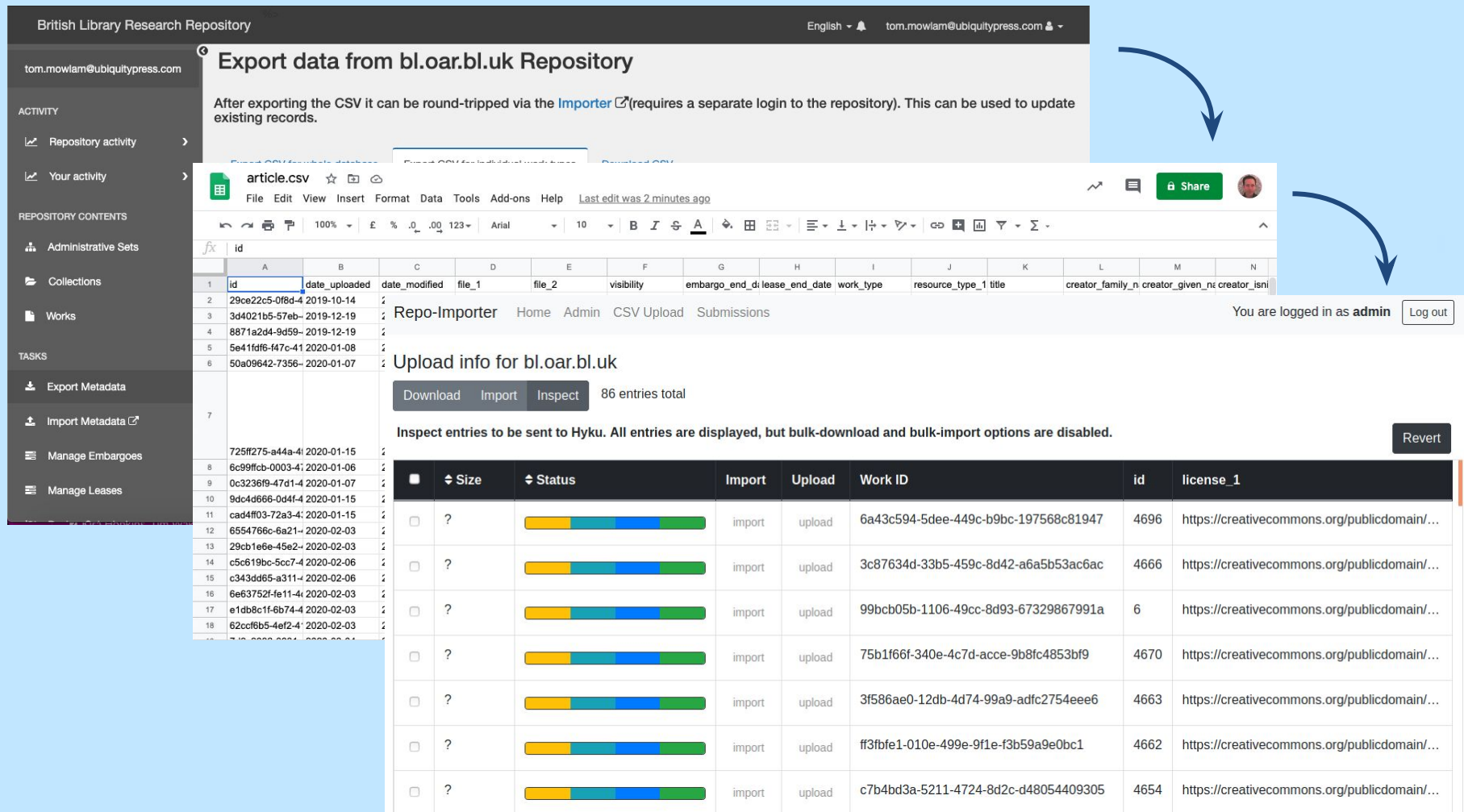
transaction Ubiquity::CitationExportsController#export_to_rif url https://mola-demo.oar.bl.uk/citation_exports/export_to_rif user ip:10.40.6.6

Bonus slide: *data I/O*



“An import without an export is a lie.” [Anonymous]

Bonus slide: *data I/O*



British Library Research Repository

English tom.mowlam@ubiquitypress.com

Export data from bl.oar.bl.uk Repository

After exporting the CSV it can be round-tripped via the [Importer](#) (requires a separate login to the repository). This can be used to update existing records.

article.csv

File Edit View Insert Format Data Tools Add-ons Help Last edit was 2 minutes ago

id	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	id	date_uploaded	date_modified	file_1	file_2	visibility	embargo_end_date	lease_end_date	work_type	resource_type_1	title	creator_family_n	creator_given_n	creator_isni
2	29ce22c5-0f8d-4	2019-10-14												
3	3d4021b5-57eb-4	2019-12-19												
4	8871a2d4-9d59-4	2019-12-19												
5	5e41fd6-f47c-41	2020-01-08												
6	50a09642-7356-4	2020-01-07												
7														
8	725f275-a44a-41	2020-01-15												
9	6c99fcb-0003-41	2020-01-06												
10	0c3236f9-47d1-4	2020-01-07												
11	9dc4d666-0d4f-4	2020-01-15												
12	cad4f03-72a3-41	2020-01-15												
13	6554766c-6a21-4	2020-02-03												
14	29cb1e6e-45e2-4	2020-02-03												
15	c5c619bc-5cc7-4	2020-02-06												
16	c343dd65-a311-4	2020-02-06												
17	6e63752f-fe11-41	2020-02-03												
18	e1db8c1f-6b74-4	2020-02-03												
19	62ccf6b5-4ef2-41	2020-02-03												

Repo-Importer Home Admin CSV Upload Submissions

You are logged in as admin Log out

Upload info for bl.oar.bl.uk

Download Import Inspect 86 entries total

Inspect entries to be sent to Hyku. All entries are displayed, but bulk-download and bulk-import options are disabled.

Size	Status	Import	Upload	Work ID	id	license_1
?		import	upload	6a43c594-5dee-449c-b9bc-197568c81947	4696	https://creativecommons.org/publicdomain/...
?		import	upload	3c87634d-33b5-459c-8d42-a6a5b53ac6ac	4666	https://creativecommons.org/publicdomain/...
?		import	upload	99bc05b-1106-49cc-8d93-67329867991a	6	https://creativecommons.org/publicdomain/...
?		import	upload	75b1f66f-340e-4c7d-acce-9b8fc4853bf9	4670	https://creativecommons.org/publicdomain/...
?		import	upload	3f586ae0-12db-4d74-99a9-adfc2754eee6	4663	https://creativecommons.org/publicdomain/...
?		import	upload	ff3bfe1-010e-499e-9f1e-f3b59a9e0bc1	4662	https://creativecommons.org/publicdomain/...
?		import	upload	c7b4bd3a-5211-4724-8d2c-d48054409305	4654	https://creativecommons.org/publicdomain/...

Bonus slide: *localisation*

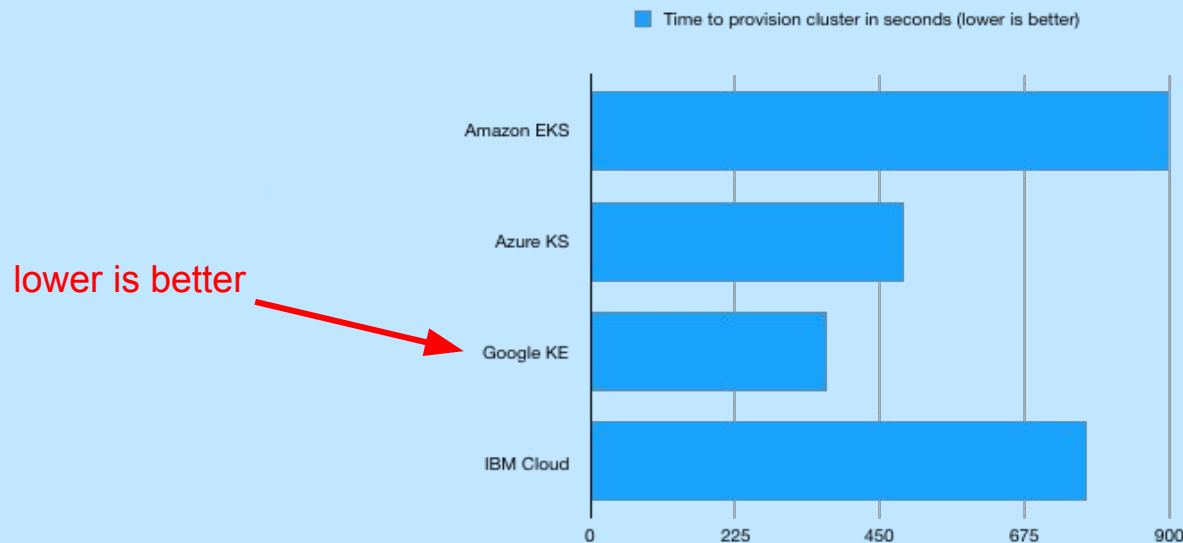
The image shows two side-by-side screenshots. The left screenshot is of the Pacific University CommonKnowledge website, featuring a red header with the university logo and navigation links like 'Home', 'A proposito di noi', 'Aiuto', 'Contatti', and 'Carica file'. A search bar with the text 'Cerca' is highlighted with a dashed white circle. Below the header, a large banner reads 'Welcome to CommonKnowledge' with a description of the platform. A red dashed circle highlights a section titled 'Collezioni in evidenza' (Collections in evidence) which lists 'Sociology Anthropology & Government Work'. The right screenshot is of the Ubiquity Translations web interface. It shows a dark header with navigation links like 'Dashboard', 'Projects', 'Languages', and 'Checks'. Below this, a breadcrumb trail reads 'repository / frontend / Italian'. A green 'Overview' button is prominent. The main content area displays 'Translation status' with progress bars for 'Strings' (590, 12%) and 'Words' (1,940, 8%). Below this is a 'Strings status' section with a list of items: 'All strings — 1,940 words', 'Translated strings — 167 words', 'Strings needing action — 1,773 words', 'Not translated strings — 1,701 words', 'Strings marked for edit — 72 words', and 'Strings needing action without suggestions — 1,773 words'.

Full frontend+backend localisation, with collaborative translation platform

<https://translations.ubiquity.press> (Weblate)

Bonus slide: *why Google Cloud and not Amazon AWS?*

1. **Google invented Kubernetes:** cloud services experts agree that Google Cloud has the best Kubernetes technology on the market, with **faster updates and better uptimes** -- source [1]
2. **Data distribution:** Google Cloud Storage has **superior download performance** compared to AWS S3 on large datasets -- source [2]



[1] <https://medium.com/faun/which-cloud-provider-is-best-for-managed-kubernetes-7de56f468a27>

[2] <http://blog.zachbjornson.com/cloud-storage-performance.html>

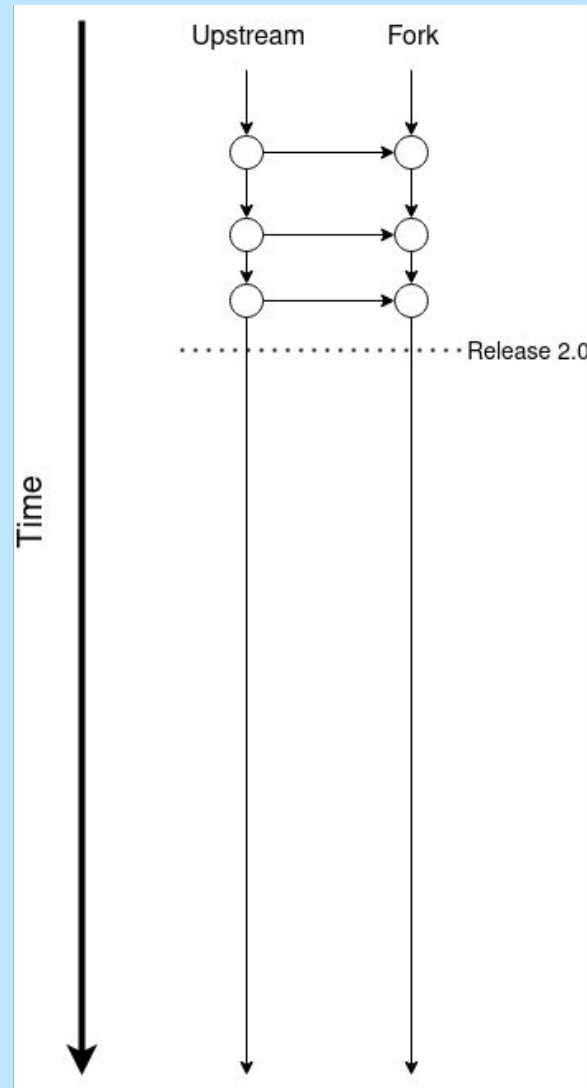
Common Hyku Customizations

- Work types
- UI changes (branding, etc.)
- New features
- Bug fixes
- Configuration
- ...

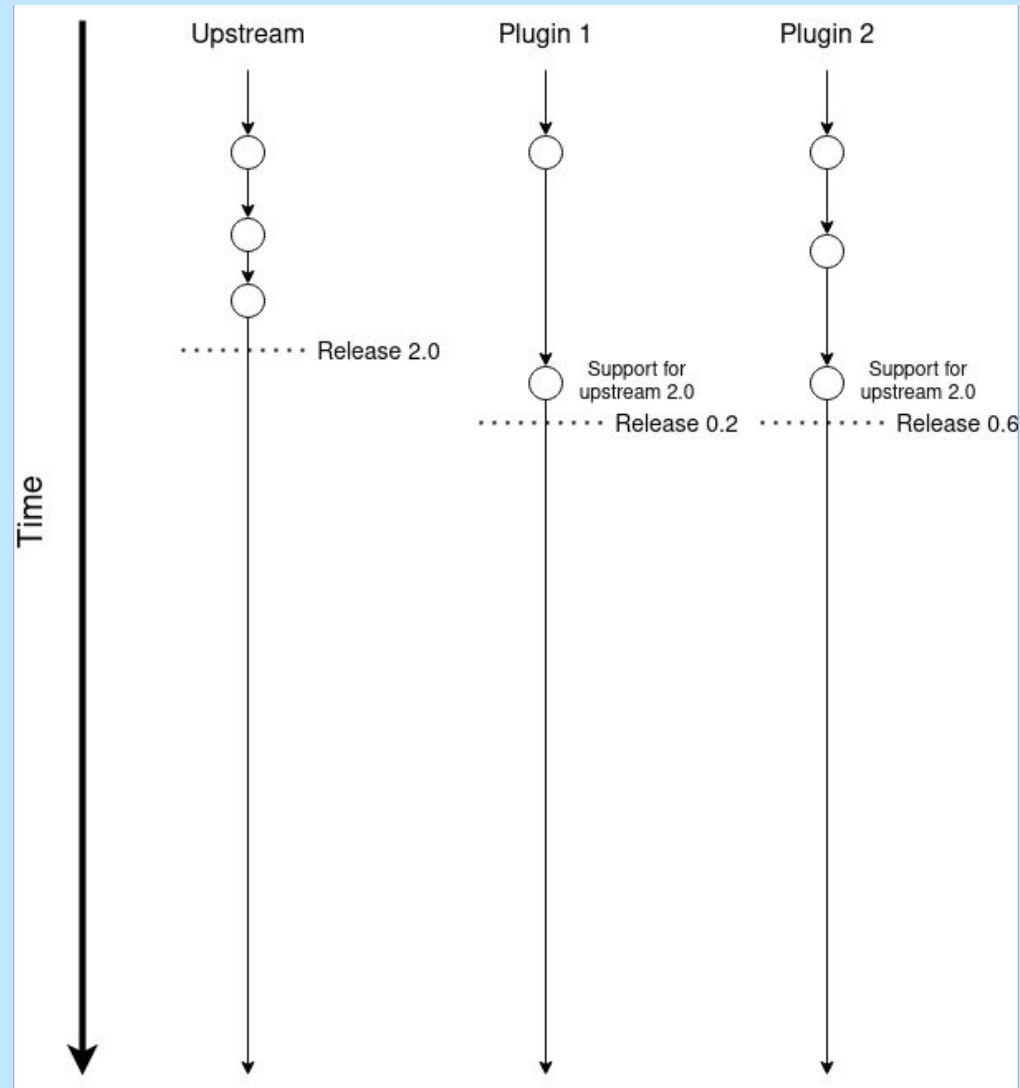


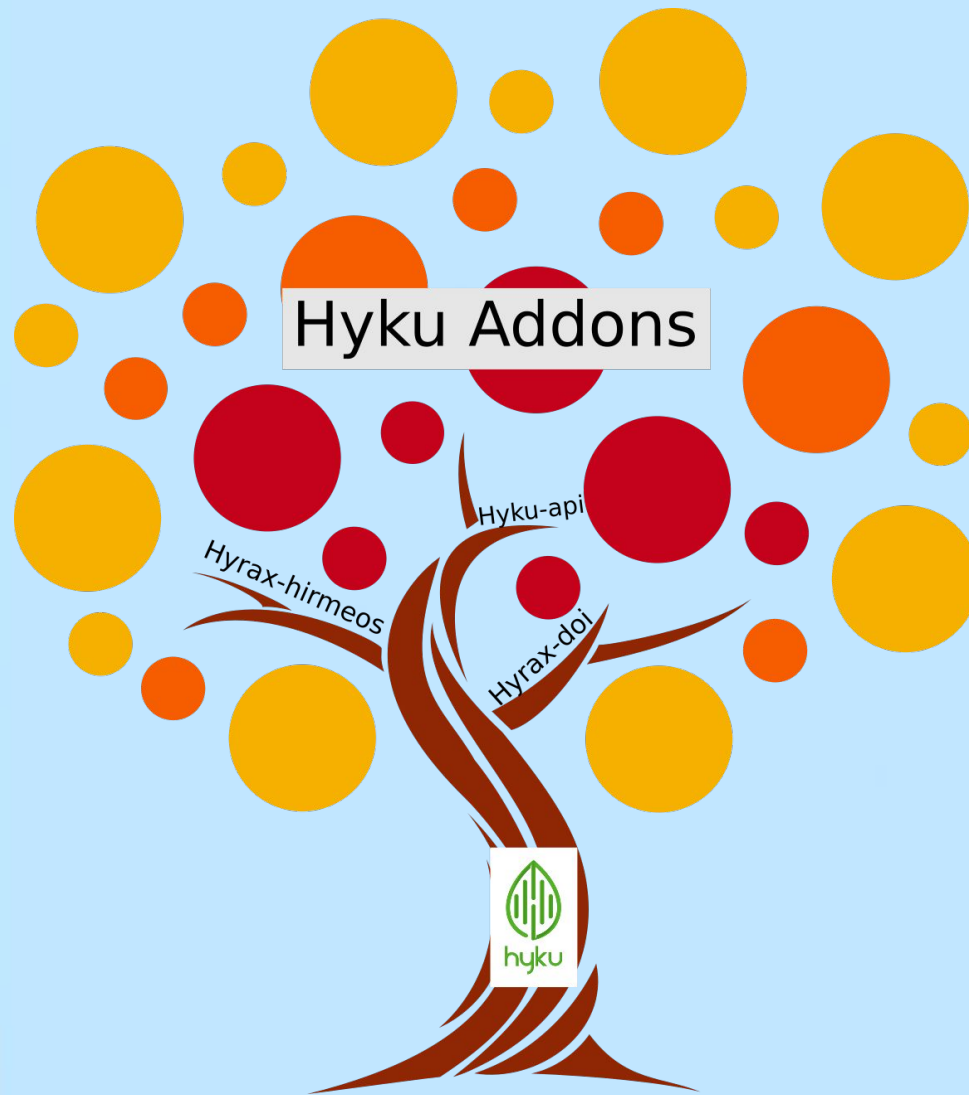
How to add customizations to a Rails application in an effective and sustainable way?

Managing customizations via forking



Managing customizations via plugins





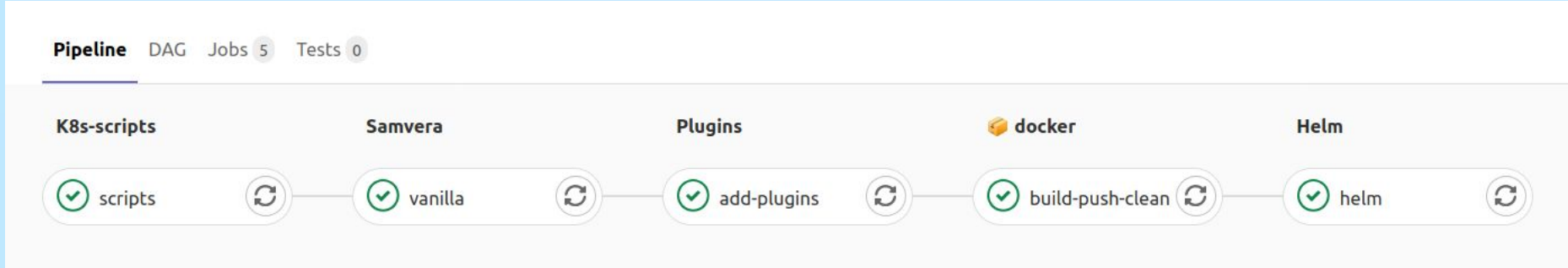
Three Layers:

- Hyku
- Plugins
- Application-specific customizations as a monolithic plugin

An all plugin approach to customizations gives us:

- Plug and play
- Common customizations as reusable components
- Independent versioning of customizations
- Allows for reuse by others
- Faster integration of upstream changes
- Easier to contribute upstream

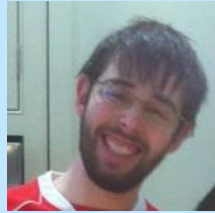
Advancing Code Architecture - Build Pipeline



Application build pipeline

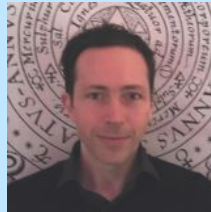
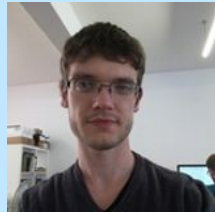
1. Clone helm chart templates
2. Clone hyku
3. Add plugins
 - a. Inject plugin gems into Gemfile
 - b. Bundle install
 - c. Run plugin generators
 - d. Copy initializers and rails environment config
4. Build docker image and push to container registry
5. Package helm charts and push to helm repository

Our repositories team



Core team:

3 Ruby Developers + 1 Product Manager



Immediate project support:

CTO (DevOps), Front end Developer,
Python Developer (Integrations), COO



Further project support:

CEO, 3 UX and Designers

Adding:

Data Engineer (migrations), DevOps Engineer, Customer Support Agents