Research and Startup

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Friedrich-Alexander University Erlangen-Nürnberg
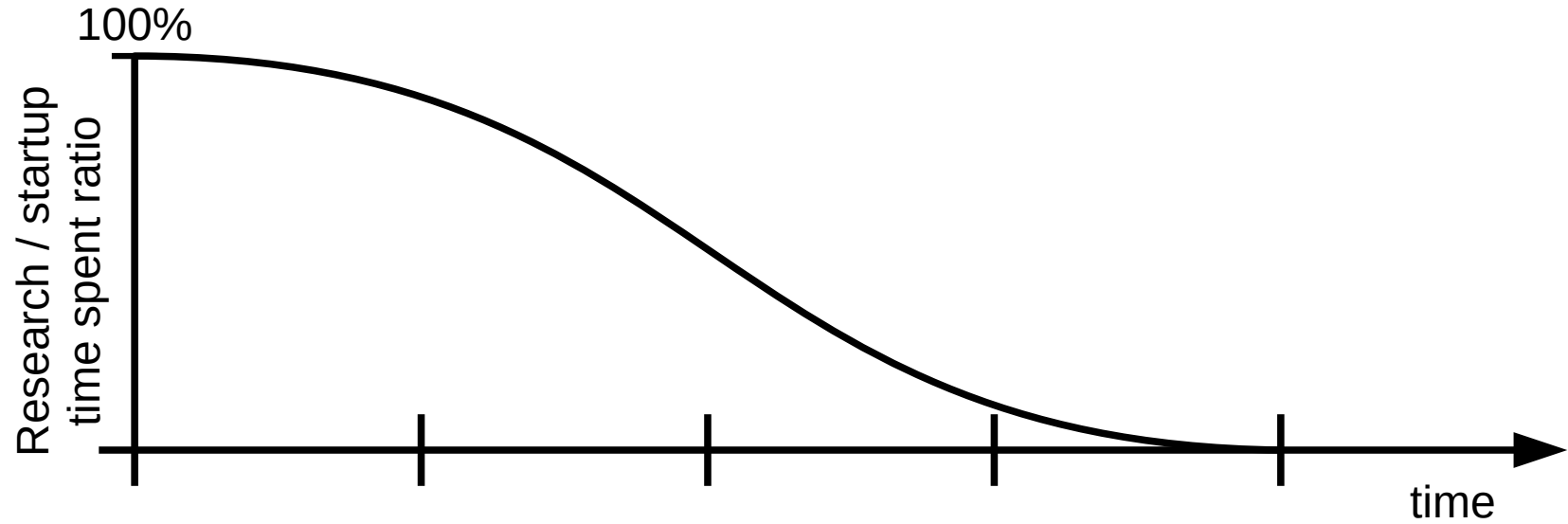
COSS D02

Agenda

1. Research vs. startup
2. Project management
3. Lead programming
4. Open source strategy
5. Getting users
6. Getting contributions
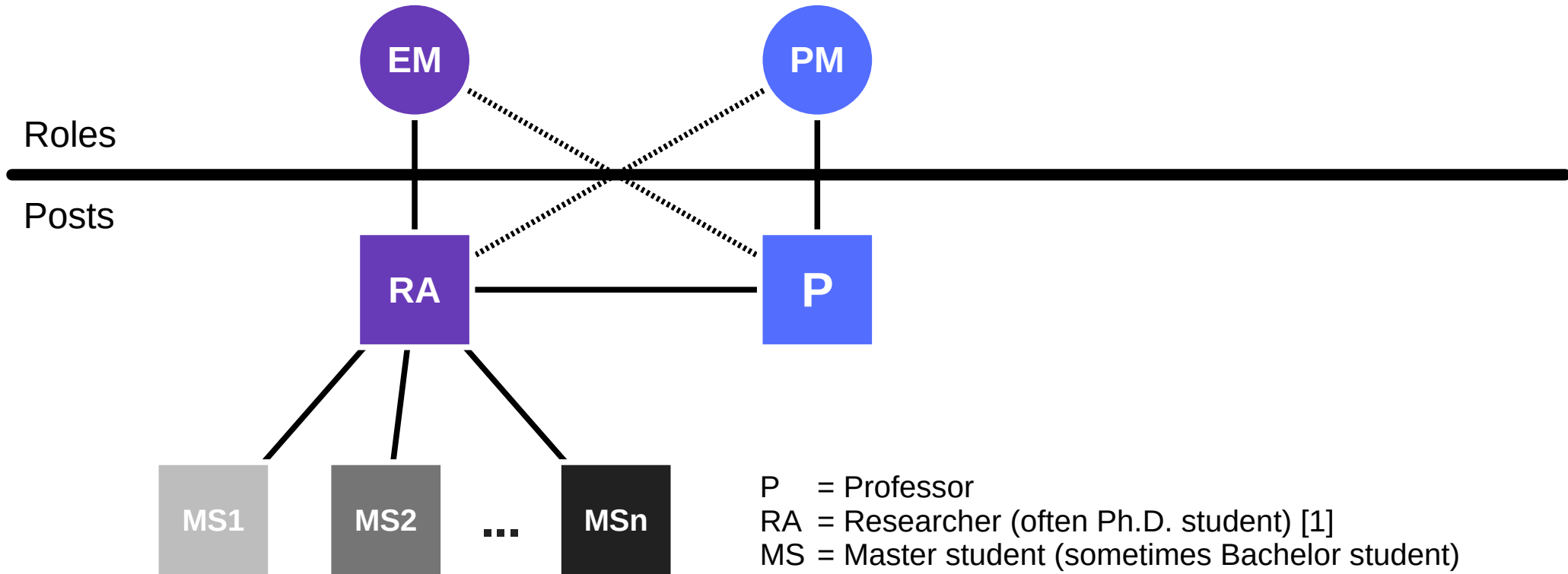
1. Research vs. Startup

Goal Conflict

- Research
  - Desired output
    - Research papers
    - A dissertation

- Startup
  - Desired output
    - Software product
    - A startup

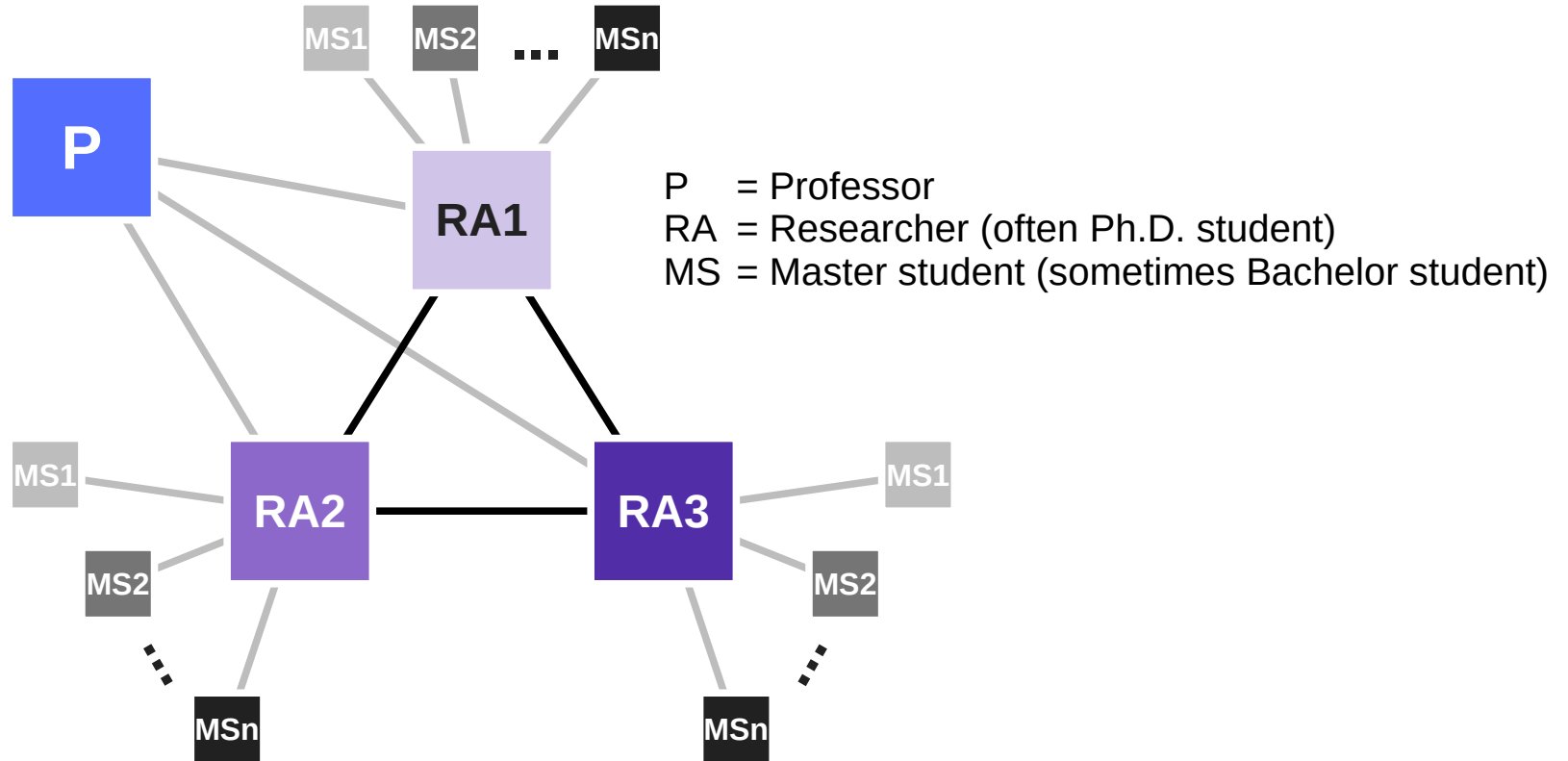# 2. Project Management

The Solo Founder Model

Roles

Posts

P   = Professor
RA = Researcher (often Ph.D. student) [1]
MS = Master student (sometimes Bachelor student)

[1]   The researcher (research project) acts as the lead engineer (startup)

The Peer Group Model

P = Professor
RA = Researcher (often Ph.D. student)
MS = Master student (sometimes Bachelor student)

Project Recruiting

- Researchers
  - Recruited by professor
  - Funded through research grants, self-funded

- Masters students
  - Recruited by researchers with support by professor
 - Funded through research grants, self-funded

Project End

- Research project finished
- Startup created (or failed)

3. Lead Engineering

Lead Engineer [1]

- A lead engineer
  - Is an engineer who leads the development of a component / system
    - In case of solo founder: The system
    - In case of peer group: A key component

  - W.r.t. the component, is responsible for maintaining
    - Product vision and getting the features done
    - Architectural integrity and code quality

  - Manages other people as they contribute to the component
    - In the beginning, they write most of the code themselves
    - Later, they review and integrate code more than they write

- Contributors are
  - Students at the university (e.g. Master's students)
  - Later: Open source volunteers

MS1

RA

MS2   MS3
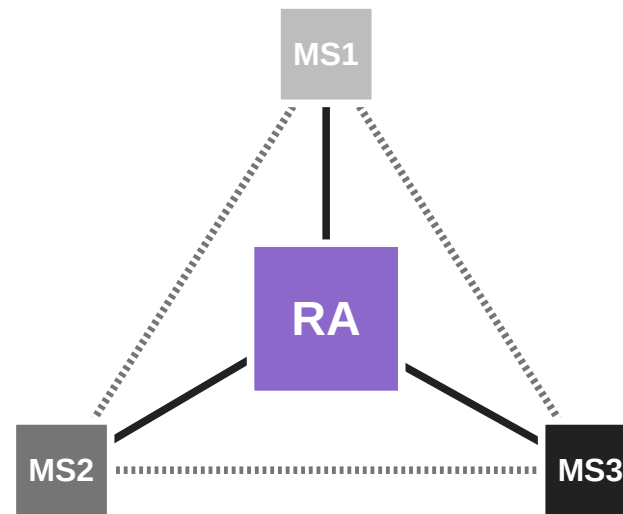
Role Name Equivalencies

Context	Lead role	Helper role
University	Ph.D. student	Master student
Research project	Researcher	Assistant
Startup project	Lead Engineer	Developer
Open source project	Committer	Contributor
Company	Co-founder	Early employee

Lead Engineer / Student Engineer Collaboration

- Lead engineer defines feature
  - If necessary breaks it down into tasks
  - Assigns tasks or waits for volunteers

- With student engineer, discusses design
  - Helps break down work into tasks / increments
  - Ideally, discussion is public (in open source anyway)

- In multiple increments, reviews and merges code
  - Student engineer provides sufficiently small commit
  - Lead programmer reviews, comments, integrates

- Until feature is fully implemented

Q qdacity 🔒

Project ID: 12461679

🔔 ⌄   ⭐ Star | 2   ⑂ Fork | 9

⊶ **8,117 Commits**   ⑂ **36 Branches**   ⬦ **24 Tags**   🗎 **216.5 MB Files**   🖫 **50 GB Storage**

| Backend Coverage | 65.00% | | Frontend Coverage | 11.20% |

| master ⌄ | qdacity / | + ⌄ | | History | Find file | Web IDE | ⌄ | 🔽 ⌄ | **Clone** ⌄ |

Q **Merge branch 'bundlemap' into 'master'** ⋯
Andreas Kaufmann authored 11 hours ago

⚠ | 293aad4b | 📋 |

⬆ Upload File   🗎 README   🗎 CI/CD configuration   ⊞ Add LICENSE   ⊞ Add CHANGELOG   ⊞ Add CONTRIBUTING

⊞ Add Kubernetes cluster

Name	Last commit	Last update
📁 .gitlab/issue_templates	Update ReleaseChecklist.md	2 weeks ago

Distributed Development

Projects

New project

Your projects 37 Starred projects 0 Explore projects

Filter by name... Last updated ▾

All Personal

|						
Q	Professorship of Open Source Software / QDAcity / **qdacity** 🔒 (Owner)	⚠	★ 2	⑂ 9	⑂ 9	⊡ 259	Updated 9 hours ago
Q	Professorship of Open Source Software / QDAcity / student-projects / **qdacity-oscar-rosner** 🔒 (Owner)	⊗	★ 0	⑂ 0	⑂ 0	⊡ 0	Updated 9 hours ago
Q	Professorship of Open Source Software / QDAcity / student-projects / **qdacity-vishwas-anavatti** 🔒 (Owner)	⚠	★ 0	⑂ 0	⑂ 0	⊡ 0	Updated 9 hours ago
Q	Professorship of Open Source Software / QDAcity / student-projects / **qdacity-hugo-ibanez** 🔒 (Owner)	⚠	★ 0	⑂ 0	⑂ 0	⊡ 0	Updated 14 hours ago
Q	Professorship of Open Source Software / QDAcity / student-projects / **qdacity-julian-lehrhuber** 🔒 (Owner)	⚠	★ 0	⑂ 0	⑂ 0	⊡ 0	Updated 1 day ago
Q	Professorship of Open Source Software / QDAcity / student-projects / **qdacity-bharathwaj-rav** 🔒 (Owner)	⚠	★ 0	⑂ 0	⑂ 0	⊡ 2	Updated 1 day ago
Q	Professorship of Open Source Software / QDAcity / student-projects / **qdacity-markus-goller** 🔒 (Owner)	⚠	★ 0	⑂ 0	⑂ 0	⊡ 0	Updated 4 days ago

Issue Management

Edit issues   New issue

Recent searches ⌄ | Search or filter results... | Created date ⌄

Add new Requirement Specification View   0 of 2 tasks completed   💬0
#700 · opened 1 week ago by Julia   Doing
updated 2 days ago

Update to Endpoint API to use Cloud Endpoints Portal   💬0
#699 · opened 2 weeks ago by Julia   Backend   To Do
updated 2 weeks ago

Save Document on switch between Text- & Coding Editor   💬0
#698 · opened 1 month ago by Julia   Bug   Frontend   To Do
updated 1 month ago

Vertically center star icon   💬0
#695 · opened 6 months ago by Andreas Kaufmann   Coding Editor   Frontend   To Do
updated 6 months ago

Saturation Metric Maximum   💬0
#694 · opened 7 months ago by Andreas Kaufmann   Backend   Bug   To Do
updated 7 months ago

Add symbol for codebookentry to the code status bar   💬
#693 · opened 7 months ago by Julia   Frontend   Nice to have
updated 7 months ago

Implement Lombok to support a better code overview?   💬
#692 · opened 8 months ago by Julia   Backend
updated 7 months ago

Save state of Code System   💬0
#690 · opened 8 months ago by Julia   Backend   Coding Editor   Frontend
updated 8 months ago

Kanban Board

Open · 57 · 0

Add symbol for codebookentry to the code status bar
Frontend · Nice to have
#693

Implement Lombok to support a better code overview?
Backend
#692

Save state of Code System
Backend · Coding Editor · Frontend
#690

Notify about not-saved code book entries
Coding Editor · Frontend
#689

Better Solution for CodeIDs
Backend · Coding Editor
#684

Problems with Chrome
Bug · Frontend · Low Priority
#678

Delete coding easier
Coding Editor · Feature · Frontend
#688

Down arrow key to change code segment
Coding Editor · Feature · Frontend
#687

To Do · 66 · 0

Update to Endpoint API to use Cloud Endpoints Portal
Backend
#699

Save Document on switch between Text- & Coding Editor
Bug · Frontend
#698

Vertically center star icon
Coding Editor · Frontend
#695

Saturation Metric Maximum
Backend · Bug
#694

Code color inherited from category
Coding Editor · Feature · Frontend
#683

Duplicate code locations
Bug · Coding Editor · Frontend
#682

Updating coding brackets on rename
Bug · Coding Editor · Frontend
#681

Crash on switching documents
Bug · Coding Editor
#680

Doing · 4 · 0

Add new Requirement Specification View
#700

List support in Editor
Backend · Feature
#645

Fix acceptance tests for pipeline
Dev · Feature · Refactoring
#673

Wiki Documentation
Dev · Documentation · Research
#633

In Review · 7 · 0

Add sync for Meta Model attributes
#657

Finer grained merge
Feature · Frontend
#666

Editable Conflict
Feature · Frontend
#667

Sync positions in diff views for theirs and mine
Feature · Frontend
#669

Deploying the NLP service
Backend · Dev
#664

Remove coding when offline
Feature · Frontend
#611

No Updates Before Sync Finished
Feature · Frontend
#591

Closed

Restructure war folder
Frontend · Refactoring
#86

Removing Codings
Bug · Coding Editor · Fronte...
#274

getCurrentUser not working
Backend · Bug
#327

Mixed Content
Bug · Frontend
#169

General Refactoring
Frontend · Refactoring
#171

Update App Engine SDK to 1...
Dev
#318

Add servlet for SSL challeng...
Backend · Feature
#270

Landing Page
Feature · Frontend
#188

Merge Request Backlog

Open 9   Merged 205   Closed 19   All 233

⬆   Edit merge requests   **New merge request**

Recent searches ⌄ | Search or filter results... | Created date ⌄ | ↓₌

---

remove URL.js from project
!234 · created 1 day ago by Oscar Rosner   🕐 Frontend Performance Optimization (Oscar Rosner)   `Frontend`

⚠ 👤 🌐 💬 8
updated 9 hours ago

---

refactor loadGAPIs()
!232 · created 1 day ago by Oscar Rosner   🕐 Technical Debt: Q3 2021   `Frontend`

⚠ 👤 🌐 💬 5
updated 9 hours ago

---

cleanup / update index.jsp
!231 · created 1 day ago by Oscar Rosner   🕐 Frontend Performance Optimization (Oscar Rosner)   `Frontend`

⚠ 👤 🌐 💬 12
updated 9 hours ago

Notification test - more tests added
!230 · created 2 days ago by Vishwas Anavatti   🕐 Improving Development Setup (OSS-SEMI)   `Backend` `Test`

⚠ 👤 🌐 💬 0
updated 2 days ago

Refactor notification
!229 · created 2 days ago by Vishwas Anavatti   🕐 Collaborative Workflows (OSS-PROJECT)   `Backend` `Refactoring`

⚠ 👤 🌐 💬 0
updated 2 days ago

Draft: User Group Revamp - delete UserGroup and UserGroupuser(Backend)
!228 · created 2 days ago by Vishwas Anavatti   🕐 Collaborative Workflows (OSS-PROJECT)   `Backend` `Feature`

⚠ 👤 🌐 💬 0
updated 9 hours ago

Draft: User Group Revamp - create/update/list of UserGroupUser (Backend)
!227 · created 2 days ago by Vishwas Anavatti   🕐 Collaborative Workflows (OSS-PROJECT)   `Backend` `Feature`

⚠ 👤 🌐 💬 0
updated 9 hours ago

Builder pattern NotificationFilter class

⚠ 👤 🌐 💬 2

Threaded Discussions

Open · Created 1 day ago by 👤 **Oscar Rosner** 🦋 (Developer)
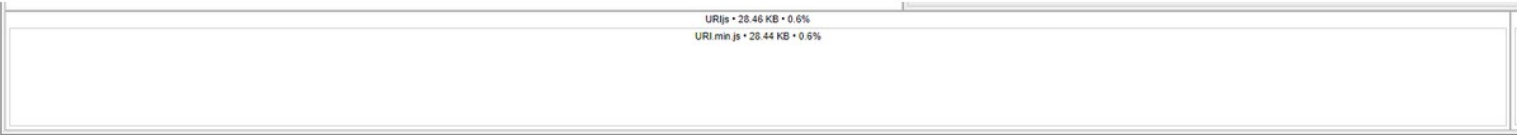
Edit · **Mark as draft** ▾

remove URL.js from project

Overview 8 · Commits 3 · Pipelines 3 · Changes 12

2 unresolved threads ▾

We use URL.js to extract query params from urls.

The minified version of URL.js makes up 0.6% (28.44 kB) of our bundle which isn't justified considering its small usecase and the fact that we can fall back to URLSearchParams.

```
URI.js • 28.46 KB • 0.6%
URI.min.js • 28.44 KB • 0.6%
```

We only use a subset of the functions provided by URL.js but it can't be treeshaked by webpack because it's a non-module javascript file and just adds functions and variables to the global namespace.

Edited 1 day ago by Oscar Rosner

Request to merge profoss/qdacity/stu… :remove urljs from p… 📋 **into** master

Open in Web IDE · Check out branch · ⬇ ▾

The source branch is 62 commits behind the target branch

Sidebar

Add a to do · »

Assignee — Edit
👤 Oscar Rosner @kexplx

Reviewer — Edit
@kaufmann_osr ↺

Milestone — Edit
Frontend Performance Optimization (Oscar Rosner)

Time tracking ⑦
No estimate or time spent

Labels — Edit
Frontend ✕

Lock merge request — Edit
🔒 Unlocked

2 participants

Notifications ✕

Thread Resolution

Oscar Rosner ✨ @kexplx started a thread on the diff 1 day ago
Last updated by Oscar Rosner 20 hours ago

⚠ Toggle thread

⚛ war/assets/js/pages/ExercisePage/ExercisePage.jsx ⎘

```
5    5
6    6    import ExerciseEndpoint from '../../common/endpoints/ExerciseEndpoint';
7    7    import CourseEndpoint from '../../common/endpoints/CourseEndpoint';
     8  - import 'script-loader!../../../../components/URIjs/URI.min.js';
```

Oscar Rosner ✨ @kexplx · 1 day ago   Developer ✓ ☺ ✏ ⋮

An upcoming MR will remove the deprecated and unmaintained `script-loader` so this MR is a nice start.

Andreas Kaufmann @kaufmann_osr · 20 hours ago   Owner ☺ ✏ ⋮

I believe since we have started using it, webpack have added better native support for importing assets as asset modules (came with v4 I think), is that the replacement for this type of loader?

Oscar Rosner ✨ @kexplx · 20 hours ago   Developer ☺ ✏ ⋮

Script Loaders GitHub says to use `raw-loader` but i think there is another more webpacky option yes.

Reply…   Resolve thread ⎘

Oscar Rosner ✨ @kexplx started a thread on an old version of the diff 1 day ago
Resolved by Andreas Kaufmann 20 hours ago

⌄ Toggle thread

Assignee   Edit
Oscar Rosner
@kexplx

Reviewer   Edit
@kaufmann_osr   ↺

Milestone   Edit
**Frontend Performance Optimization
(Oscar Rosner)**

Time tracking   ⍰
No estimate or time spent

Labels   Edit
Frontend ✕

Lock merge request   Edit
🔒 Unlocked

2 participants

Notifications   ⊗

Reference: profoss/gdacity/gdacit

Other Considerations

- Single (mono) repository vs. many
- Main-line vs. feature branches

4. Open Source Strategy
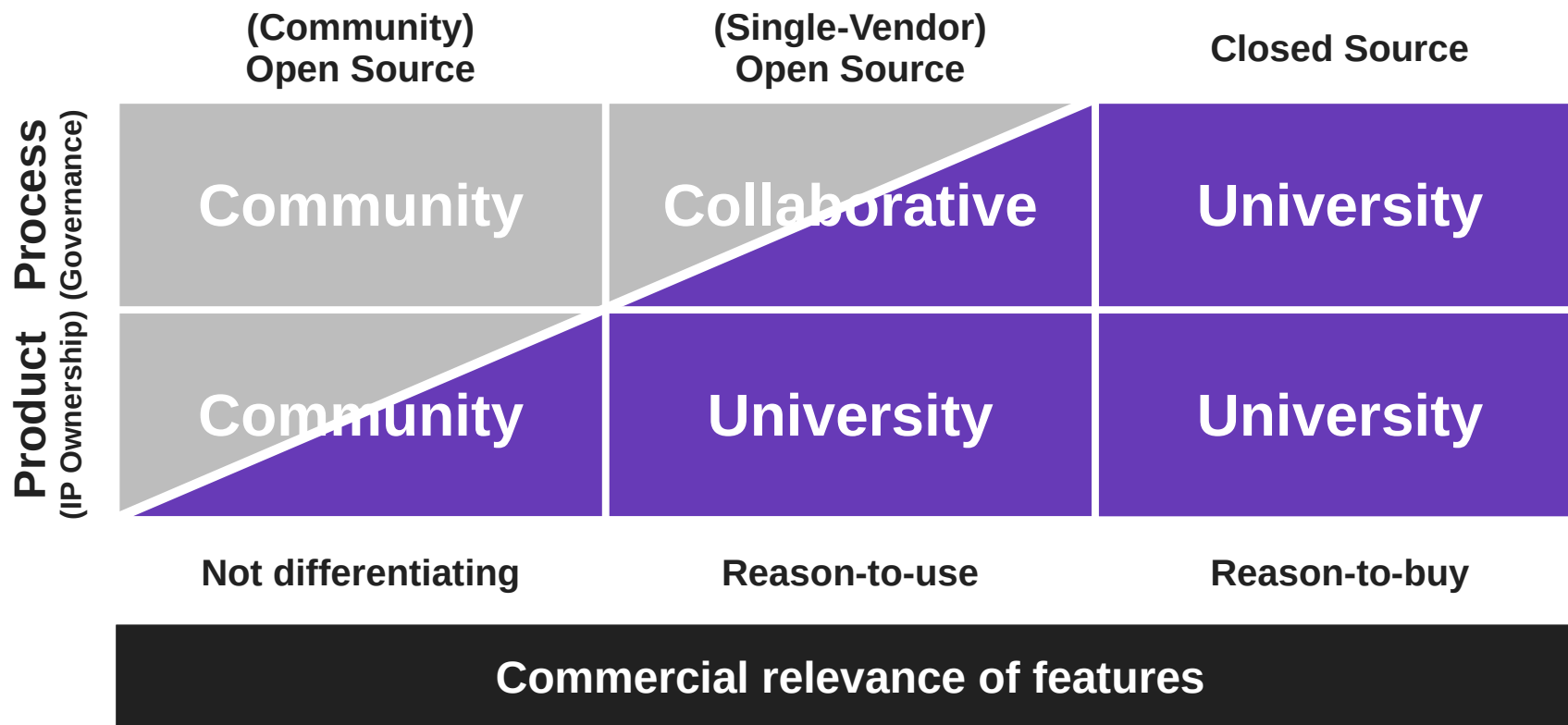
Pushing out Features
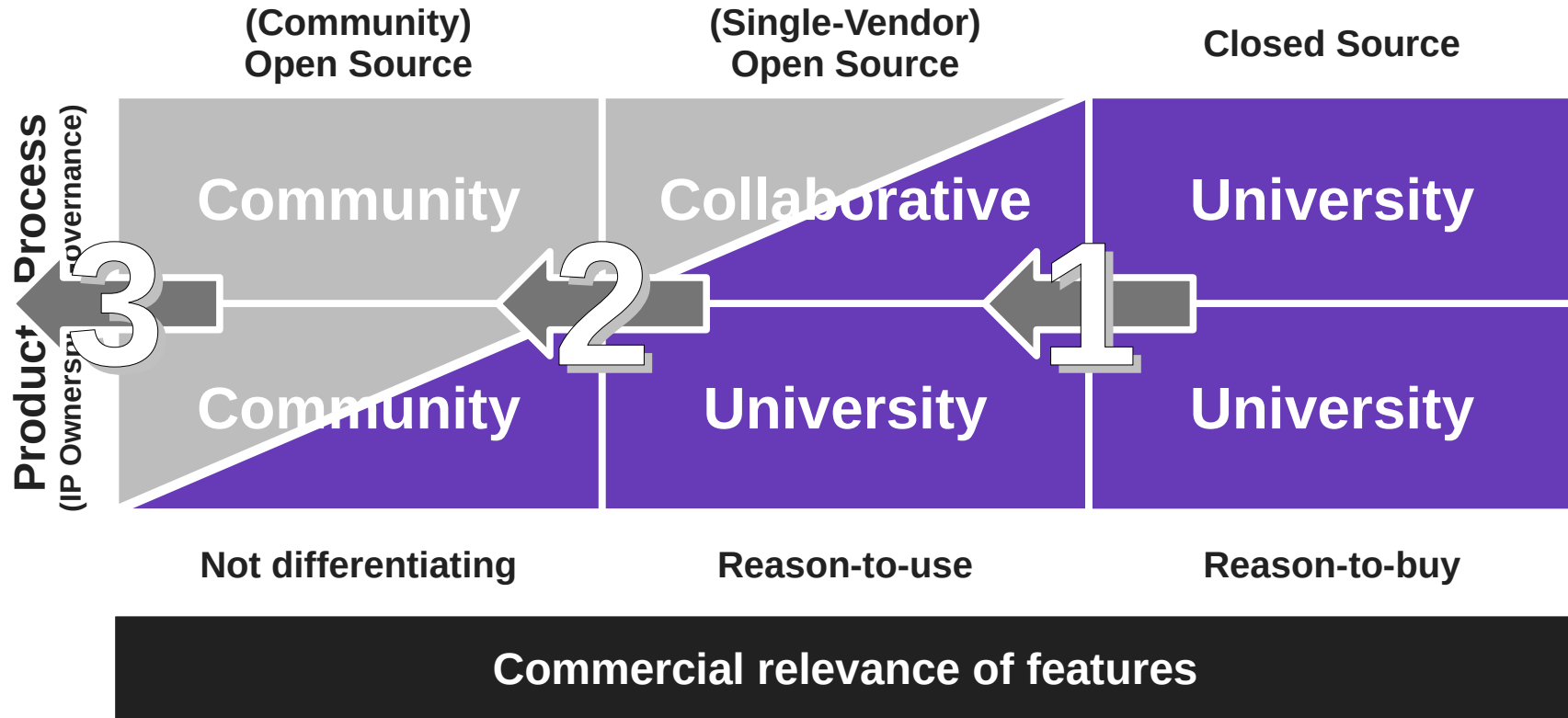
Pulling in Features
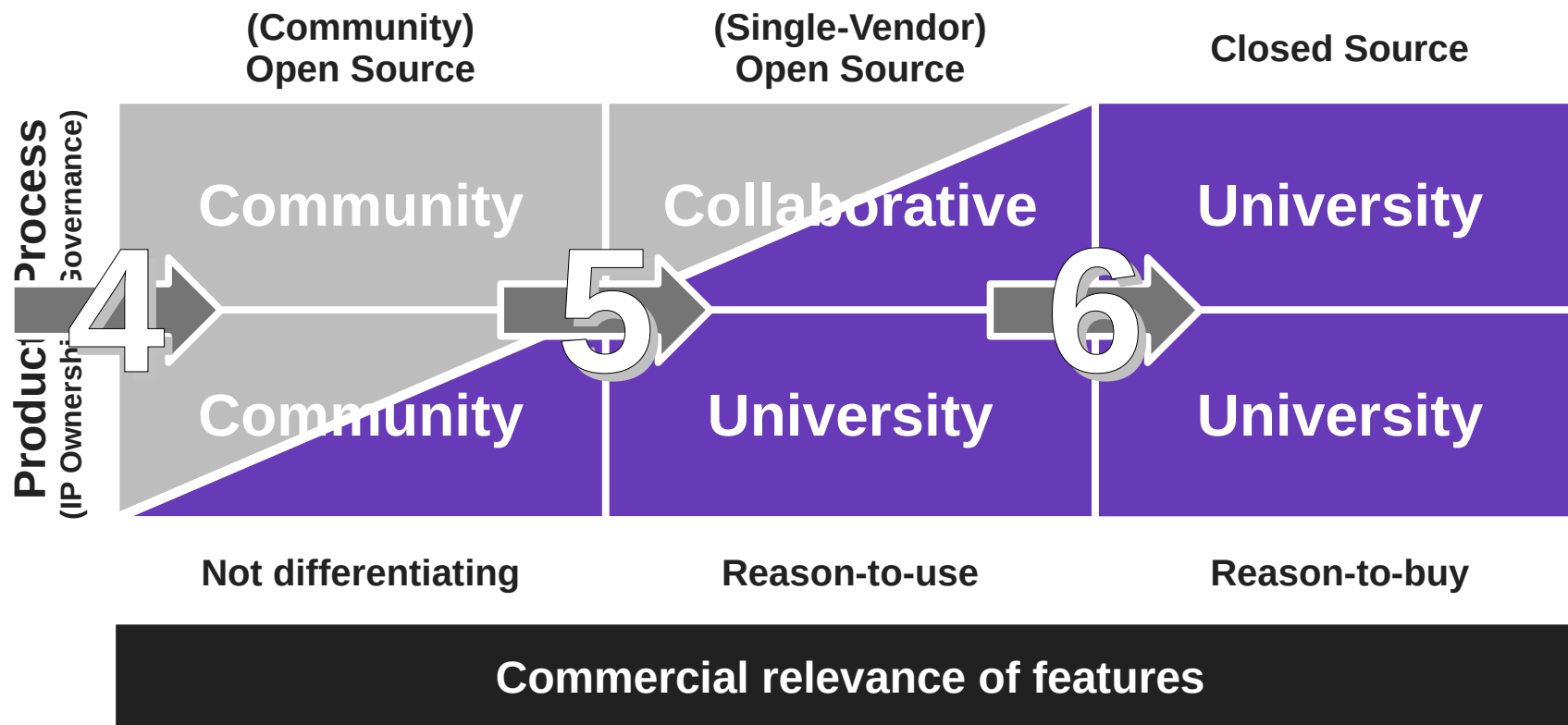
Public Money, Public Code?

- Universities have both a non-profit and commercial part
    - Universities are tasked with research and teaching, among others
    - Universities are also tasked with exploiting their innovations

- It is the university's choice what to give away for free

5. Getting Users

1. Get Used!

1.1 Get found
- 1.1.1 Have good name
- 1.1.2 Have one defined place
- 1.1.3 Have good project page
- 1.1.4 Register in relevant places

1.4 Stay in touch
- 1.4.1 Provide announcements channel

1.3 Make use easy
- 1.3.1 Define use cases
- 1.3.2 Provide live demo system
- 1.3.3 Provide readily usable binary
- 1.3.4 Follow established practices
- 1.3.5 Provide user documentation

1.2 Inspire trust
- 1.2.1 Provide all relevant information
 - Provide license
  - Provide project summary
  - Provide public roadmap
- 1.2.2 Practice open communication
  - Communicate publicly
  - Communicate in written form
  - Communicate completely
  - Archive all communication
- 1.2.3 Explain sensitive topics
- 1.2.4 Be matter-of-fact

6. Getting Contributions

Mind map centered on **2. Get contributions!**

- 2.7 Protect intellectual property
  - 2.7.1 Require DCO
  - 2.7.2 Require CLA
- 2.6 Build trust
  - 2.6.1 Practice open collaboration
    - Welcome everyone
    - Decide based on merits
    - Allow for self-organization
  - 2.6.2 Manage all work publicly
  - 2.6.3 Track and give credit
  - 2.6.4 Celebrate small successes
- 2.5 Engage contributors
  - 2.5.1 React speedily
  - 2.5.2 Turn contributions into conversations
  - 2.5.3 Have public discussion channels
  - 2.5.4 Understand contributor needs
- 2.1 Say welcome!
- 2.2 Make contributing easy
  - 2.2.1 Provide good first issue
  - 2.2.2 Provide contribution guide
  - 2.2.3 Provide tasks for everyone
  - 2.2.4 Provide developer manual
- 2.3 Communicate effectively
  - 2.3.1 Assume good faith
  - 2.3.2 Speak to the issue, not the person
  - 2.3.3 Praise plentifully, criticize specifically
- 2.4 Practice code review

Summary

1. Research vs. startup
2. Project management
3. Lead programming
4. Open source strategy
5. Getting users
6. Getting contributions

Thank you! Questions?

dirk.riehle@fau.de – **https://oss.cs.fau.de**

dirk@riehle.org – https://dirkriehle.com – @dirkriehle

DR

Credits and License

- Original version
  - © 2021 Dirk Riehle, some rights reserved
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- Contributions
  - None yet