

Polkadot.study

Educational Hub for Developers in the Polkadot Ecosystem

1. Proponent

Name: niftesty

KSM address: [DT7kRjGFvRKxGSx5CPUCA1pazj6gzJ6Db11xmkX4yYSNK7m](https://polkadot.network/address/DT7kRjGFvRKxGSx5CPUCA1pazj6gzJ6Db11xmkX4yYSNK7m)

Date: 15.02.2023

Total Requested allocation: 1492 KSM

Short description: Creation of an open source Polkadot learning platform for developers of different areas, as well as bounties for writing tutorials.

2. Context

The goal of the proposal is to help onboard more developers to the Polkadot / Kusama ecosystem. Developer amount and activity are crucial metrics in measuring the success of a blockchain ecosystem (c.f. <https://twitter.com/Polkadot/status/1615719851976458241>). A welcoming community as well as good educational content and well documented libraries and frameworks are decisive for developers to eventually work in an ecosystem.

The treasury has already funded big and small media initiatives like e.g. WagMedia that concentrate on the production of media not primarily targeted to developers. They are successfully helping users in different languages understand the Polkadot ecosystem better. Furthermore a huge part of treasury funded projects are in fact developer initiatives to create applications that make the ecosystem more appealing or add new features. While many of those projects publish their code in open source repositories, so everyone can study them, it can become relatively hard to understand complex codebases in highly specialized fields.

Tutorials (in written form or as videos) are of huge prominence in the developer community, as they can convey new concepts or coding languages to developers in informative ways. Almost all developer tutorials will contain code examples that are then explained to the readers / viewers. Interactive elements or quizzes enrich that learning experience. There are different learners: some might prefer to read docs, some directly to look at the code, and some to follow tutorials. Tutorials are very good for newcomers, to show how to connect different concepts together into a running solution that serves a need. Good tutorials are furthermore enriched by links to the docs and the code to link interested readers to the original source of information.

3. Problem

In the Polkadot ecosystem, educational resources for developers are highly scattered across many places (e.g. each parachain has their own platforms) or just do not exist (yet). That makes it really hard for new developers to start building for the Polkadot network. There is a multitude of areas and programming languages Polkadot is exposed to (e.g. WASM, typescript, rust) with specialized frameworks or libraries (e.g. substrate, polkadot.js) and even more areas of application that are complex and not easy to understand for beginners.

I, as a front-end developer have experienced that while developing the UI for proofofchaos.app and have spent hours reading code and trying to understand the underlying concepts (especially working with polkadot.js and indexers). Besides, many developers I talked to decry existing documentation that is sometimes either incomplete or outdated in a quickly evolving blockchain ecosystem.

Polkadot / Kusama / Parachains are missing one platform that offers developers an easy way to onboard, by providing good educational resources, that are easy to follow, easy to find, fun to do and that give context about underlying concepts. The relay chains and the parachains as well as the named frameworks and libraries already have good documentation, that sometimes also include tutorials. Nevertheless, a community organized, decentralized educational platform from developers for developers is missing badly. Polkadot.study will close some missing gaps in educating developers, by relying on the distributed knowledge of developers in the community who have already worked their way through several documentations and tutorials to reach their functional products already powering the whole network.

4. Proposal

My goal with this proposal is to lay the foundations for a developer focused learning platform for the Polkadot and Kusama ecosystem, covering the complexity of a quickly evolving space for developers.

4.1. Available solutions

Many projects or parachains already have their individual docs and tutorials. Some are very well written and maintained, some are not and are lacking hands-on examples. Here are some examples to check:

- Official Parachain Docs, e.g.
 - [Subsocial](#)
 - [Kilt](#)

- And many more
- [Official Substrate Learning Documents](#)
- [Official Polkadot JS doc](#)
- Developer Blogs
- [Use Ink!](#)

At the moment of submitting this proposal draft, there are several Proposal drafts concerning educational platforms being discussed on Polkasassembly and Kusama Discord. They however aim at educating general users and not developers per se:

- [learneasy.app](#)
- [Polka Training](#)

4.2. Proposal Solution

Polkadot.study is aiming to be an open educational platform **for developers by developers** and to provide good educational content in the form of tutorials / videos with interactive learning exercises and incremental learning exercises¹. It will provide the infrastructure for submitting tutorials in a well organized, accessible way as well as fund the creation of professional tutorials. It will allow readers to learn about concepts relevant to the Dotsama ecosystem by providing an entry point for tutorials, documentation and repositories for studying.

Polkadot.study will **build on existing solutions** that have already proven to be a reliable source for very good developer documentation and educational content: [Docusaurus](#). It makes it easy for writers to concentrate on the content, it can easily be enriched with [interactive code snippets](#) and custom plugins and has well proven across the ecosystem, e.g. is already powering the [Polkadot Wiki](#), the [KILT documentation](#), the [subsocial developer documentation](#) and probably many others. Also it offers built-in searches which is of great importance for a chain and language agnostic platform as it enables developers to quickly find their desired tutorials. All tutorials will be written in Markdown (md) and a specific markdown dialect ([MDX](#)) that allows authors to concentrate on the content, without having to focus too much on formatting. Even more important, it allows for easy maintenance of written content and for **interactive coding exercises**.

All the code for the platform, as well as the tutorials and documentation will be **open sourced on github**. In that way, new content can easily be submitted by anyone with knowledge of `git` in the form of Pull Requests that can be authored by the repository team. The platform aims to be open to anyone: with a different skill level of the readers as well as a multitude of authors.

Tutorials

¹ i.e. first solve Problem A, the solution can then make Problem B easier to understand

A crucial part of a successful, future proof educational platform is the content. That is why we are asking for money to bootstrap the writing of new developer tutorials. From the proposal funds, we will give out 10 bounties of each max. 1050€ (+tax) to different developers willing to write tutorials on their chosen subject. The authors will be provided with help and the criteria defined in 6. *Accountability / Key Deliverables*. There are already some ideas and authors who manifested their interest, more will follow, as soon granted. Also the list is not complete as one main goal is to let authors decide what to write about themselves.

1. **Creating a token gated website with next.js and polkadot.js and the use of indexers**

[polkadot.js] [indexers] [next.js] [NFT]

Only allow accounts, holding a specific NFT / NFT from a collection / Token, access to a page.

By *Niklas Plessing* - Frontend Dev at *proofofchaos.app*

2. **How to register (para)chain metadata and why it is important.**

[rust] [cryptography]

How parity signer and polkadot.js make use of metadata to secure transactions.

By [Pavel Rybalko](#) - Software Dev at *Parity Signer*

3. **Writing a dApp for Kusama Open Gov (GOV2) with typescript + next.js**

[polkadot.js] [next.js] [governance]

Technical intro to gov2 + using polkadot.js for communicating with nodes via JSON RPC + finding information in github repositories.

4. **Implementing a Rust data structure for Merkle Trees and Merkle Proofs**

[rust] [blockchain basics]

What are merkle trees used for and how can it be proven that a certain piece of information is part of that merkle tree?

By *Arthur Franco*

5. **Difference between pallets and smart contracts**

[NFT] [substrate]

Code example with NFTs using the unique pallet. When and why would you pick pallets over smart contracts.

...

subject to change

On the content side of things the site will provide a dedicated “landing page” for each subject (e.g. “polkadot.js”, “substrate”, “ink”). That page will show all tutorials tagged with that tag, as well as some intro text, official docs and other learning resources that already exist (e.g. Youtube channels, github repos).

Giving out 10 bounties to developers who create educational content, that will be included into polkadot.study. In the case of more than 10 authors that express their interest in writing a tutorial, I will set up a simple poll and post it to several Kusama related channels (discord, twitter, Polkasassembly), to decide which ones to fund. Being well networked in the ecosystem through my previous work, twitter activity and my participation in the Polkadot Blockchain Academy, I am very confident to find great authors as soon as granted. I will publicly announce the search for authors on different channels to find a large amount of potential authors.

Website

As laid out above the platform will build on existing solutions enriched with custom components and custom landing pages for aggregating information.

The goal is to implement the following:

- Transforming the WebDesign into typescript / css code based on Docusaurus
 - Landing Page (recent tutorials, most viewed, ...)
 - Authors Pages
 - Tag Pages (e.g. all tutorials tagged “typescript”)
- Setup of the Docusaurus environment
- Github Continuous Integration for automatic builds and previews of new docs
- Custom react components for quizzes (*see Appendix*)
- Wallet Connect to bookmark tutorials, follow tags / authors
- Profile page with bookmarks / feed of new tutorials
- Setting up logic for automatic tag generation, author pages

As we are creating a developer centric community website, a huge part of the frontend logic can be skipped, i.e. providing forms where authors can submit their tutorials, or worse, manually having to format tutorials. All new tutorials and updates can easily be submitted via pull requests to the github repository. Github already offers great ways of code reviews and comments that can

be used to discuss and refine authors' tutorials. Also different branches allow the preview of new content before it is merged into the production site.

On top of that the website will also be an aggregation site for great existing tutorials that exist already, ordered under the respective category:

- <https://github.com/rusty-crewmates/substrate-tutorials>
- <https://substrate.recipes/> (deprecated)
- <https://github.com/shawntabrizi/substrate-trait-tutorial>
- <https://www.shawntabrizi.com/xcm-workshop/>
- ...

Having one place where all of them are listed, makes it easier for learners to discover content they are looking for. I am also aiming to make polkadot.study easily discoverable by search engines and their users by providing good page speed metrics and well formatted seo metadata.

5. Budget and timeline

The proposed length of the project is 4 months. The proposal will be defined with 2 milestones during that period with the best estimation, where some tasks may overlap, or continue in following milestones by e.g. refining the deliverables of the former.

Milestone 1. – first month – Planning and Reachout	
Research + Planning + Setup	Proposal planning, Deep dive into Docusaurus and all available components, as well as documentation on how to extend it with landing pages and custom components (quiz). Setup github workflow and actions for CI (40h)
Existing Content Moderation	Collecting information on existing docs and tutorials and aggregating links, open source resources that can be included into the platform, as well as choosing tags and contacting parties in charge for content on those tags (e.g. “substrate” tag, link to doc, short description, additional learning material) (20h)
Web Design	Finishing the web design prototype) with landing page, subpages and polkadot adapted Docusaurus theme (30h)
QA1	Develop criteria for the tutorials, developing a writer's cheat sheet (30h)
Reachout + Help	Connecting with technical writers/educators to back the creation of the initial 10 tutorials on different subjects as well as giving support with Docusaurus and git. (20h)

Time / Cost	[5h / day * 28 days = 140h] * 70€/h = 9.800€
Technical Writers / Content Creators	Creation of educational resources by different authors with (interactive) code examples submitted to the polkadot.study github repository under a creative commons license of the authors choice. Learning needed Docusaurus basics. Incorporating one round of feedback and adaptations.
Time / Cost	15h * 70€/h = 1050€ * 10 = 10.500€
Total time and Budget Milestone 1	20.300 €

Milestone 2. – 2nd - 4th month – Platform Creation	
Development	Creating the online platform according to above specifications.
Time / Cost	[4h/day*45 days = 180h] * 80€/h = 14.400€
Management	Planning, organization, alignment (10h)
QA2	Review of the supplied tutorials, corrections, adaptations, technical support of creators (30h)
Time / Cost	[4h/day*10 days = 40h] * 70€/h = 2.800€
Technical Writers / Content Creators	Continuation of the tasks in Milestone 1
Total time and Budget Milestone 2	17.200€

Total Overall	18.900€ + 17.200€ = 37.500€
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6. Accountability / Key Deliverables

- **Website**
 - a. Open Source online learning platform for developers in the Polkadot ecosystem hosted on polkadot.study and github.

- b. The platform should be written with typescript and react and follow the **specification in 4.2**
 - c. The platform should built on Docusaurus
 - d. The website should provide a tutorial for authors on how to submit a new educational resource in the form of github pull requests and what sections it should include.
 - e. The github repository should be configured for continuous integration and build automatically and deploy to polkadot.study when changes are merged into the main branch
- **Tutorials**
 - a. 10 starter developer tutorials built on top of Docusaurus and written in Markdown and/or their Markdown dialect MDX.
 - b. They should be from at least 7 different authors (decentralization).
 - c. They should include at least the following sections:
 - Intro - what is the problem we want to solve and what technology / frameworks / coding practices will be used
 - Time needed for the tutorial
 - Prerequisites / Before you begin
 - Tutorial Objectives
 - Content with (interactive) code examples
 - Roundup
 - Additional Resources (Docs, Links, Memes, Tutorials, Pdfs (papers), GitHub repos, ...)

I will report the progress of the project at least every month on the dedicated Polkasassembly Page for this Proposal

6.1. Key objectives / Success criteria

- The online platform should be search engine optimized and content should be easy to discover
- Developers are encouraged to create diverse educational resources for other developers
- The online platform should be easy to use and provide a great user experience.

6.2. Future

We submit this proposal to Kusama as proof of concept and to measure the success. If it turns out successful, we will move upcoming proposals about developing polkadot.study further to Polkadot Governance. The focus of future proposals could be: allocating more funds for tutorial authors, decentralizing the choosing of authors / tutorials by governance processes.

Docusaurus also offers the option of localization (i.e. providing content in different languages) which will not be part of this proposal but might come very handy in future versions.

Polkadot.study is not primarily about written tutorials. It is easy to integrate educational videos or other media into the tutorials. The main focus at the beginning is however on written tutorials, that are in my opinion easier to follow, or let's say easier and therefore cheaper to create than videos. Consider videos an addon feature that can be added when community developers or educators offer to create them. Also they are more costly to produce.

This proposal is mainly about the creation of the platform. The 10 starter tutorials are only a way to kickstart the process and provide a foundation for further contributions.

7. Payment Condition

The proposer will submit a proposal to receive the funds from the Kusama treasury as the Governance referenda – Medium spender track.

7.1. Budget

Final budget	
Milestone 1.	20.300€
Milestone 2.	17.200€
Budget	18.900€ + 17.200€ = 37.500€
Income tax ¹	22,69% * 37.500€ = 8.508€
Conversion/slippage 2%	750 €
Final Budget	46.758 €

Treasury request	
KSM/USD EMA30 on 15/02/2023 ²	33.61 USD
EUR/USD MA20 on 15/02/2023 ³	1.0723

KSM/EUR EMA20/30 on 08/02/2023	31.34 €
Total amount requested	46.758€ / 31.34€/KSM = 1492 KSM

Sources:

- ¹ German income taxes rely on many factors (yearly total income, being married, ...). The assumed amount of 22,69% is an average based on a single person with a yearly income of 50.000€. In case of overpayment and less tax declared on subcontractors invoices, the difference will be paid back to the treasury. Percentage based on: <https://www.bmf-steuerrechner.de/ekst/eingabeformekst.xhtml?ekst-result=true>
- ² KSM/USD EMA30 source: <https://kusama.subscan.io/tools/charts?type=price>
- ³ Daily EUR/USD conversion rate: <https://www.investing.com/technical/moving-averages>

7.2. Payout

Funds are requested in two parts, one upfront and one on completion. To cover the costs for the funding of the proposals, the initial development and web design and to fit the second payout into the small spender track, I request a 80/20 split: 80% of the amount paid upfront and 20% on completion,

i.e. **1193 KSM + 299 KSM.**

I will set up a new proposal for the second part upon completion of the website.

Team

Name: Niklas

KSM address: [DT7kRjGFvRKxGSx5CPUCA1pazj6gzJ6Db11xmKX4yYSNK7m](https://kusama.subscan.io/address/DT7kRjGFvRKxGSx5CPUCA1pazj6gzJ6Db11xmKX4yYSNK7m)

Github: <https://github.com/niklasp>

Element: @eenoo:matrix.org

Twitter: [@niftesty](https://twitter.com/niftesty)

Email: niklas@eedee.net

Ecosystem History:

I am working as a freelance developer with > 15 years of experience. I am the frontend-dev of <https://proofofchaos.app> where I just successfully created the UI and logic for OpenGov on Kusama. Our platform was built over the last 6 months following the initiative of Gabriel and is also founded by the Kusama treasury. We will continue working on the project together.

I recently successfully graduated at the 2nd Polkadot Blockchain Academy (02/2023) with a total

score of 88/100.

Besides, I documented the beginnings of my Kusama developer experience in two tutorials about the Development of a Kusama NFT collection explorer that I will update and revise and put on *Polkadot.study* if this proposal passes.

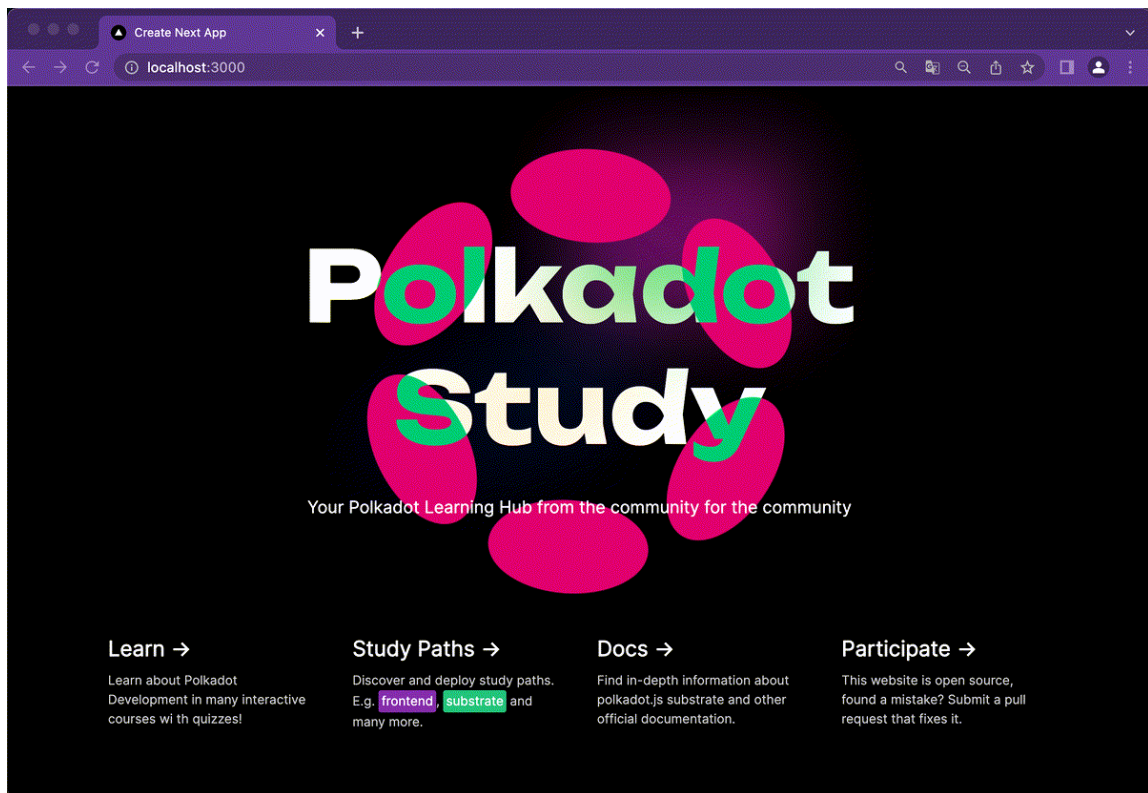
I have already connected with a variety of different developers in the ecosystem and am very confident I can find more people from different backgrounds with different expertise, that can write tutorials on the most relevant subjects, they consider missing in their field.

Names: Lena R., Vreni K.

Designers, Webdesigners with more than 10 years professional work experience. [See a short portfolio here.](#)

Annex

Website Landing Mockup



Example of a quiz component that can be used for quizzes that enrich the learning experience (taken from great online courses of [Apollo GraphQL](#))

🔁 Which of these are benefits of schema-first design?

- It reduces total development time.
- It enables teams to work in parallel.
- It provides frontend applications access to all backend data.

Submit

🚫 **Try again.** (Solution available in 2 attempts). Review the video or read the course to find the right information.

Interactive Code challenge, also taken from the above resource.

🔗 Code Challenge!

Create a full schema with: a type `Query` containing a field `spaceCats` to fetch a `List` of `SpaceCat`. A type `SpaceCat` with its subfields: `id` of type `ID!`, `name` of type `String!`, `age` of type `Int` and `missions` of type `List` of `Mission`. Finally define the `Mission` type with its subfields: `id` of type `ID!`, `name` of type `String!`, and `description` of type `String!`.

```
1 const typeDefs = gql`
2   # write your schema definitions here
3 `
```

Run ▶

Solution available in 1 attempt [Reset](#) 🔄

🚫 Syntax Error: Unexpected <EOF>.