

# Polkadot Analytics prospective query service: a case study

## Article

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Web3 Foundation Grants Program

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# 1. Research overview

The current research grant tackles the development of a conceptual framework for the Polkadot multi-chain ecosystem. In the long run, this framework will be used to promote data integration, knowledge reasoning, and better communicability for the ecosystem community. It is a first step towards creating a rich and convenient asset for performing query searching and data analytics on Polkadot's ecosystem.

In the second milestone [1] of the current research grant, we designed a case study to explore a possible application of the draft ontology POnto delivered in Milestone 1 [2]. We proposed a prospective query engine in Polkadot's multi-chain ecosystem, called Polkadot Analytics. The case study discussing aspects of its design and implementation are described in a technical report [3]. The methodology used to devise this case study is discussed in the Section 2 below.

The Polkadot Analytics query service aims at supporting a broad range of queries and data visualization strategies. Query results are structured as artifacts with multimodal content, representing the data results and summarization aspects. Ultimately, users may integrate multiple informative artifacts to compose their own dashboards. To describe a possible interaction with this service, we created a specific Polkadot-related use case through a descriptive scenario [4].

## 2. Methodology

Case study is a research method employed in various domains to investigate in depth a specific phenomena, item, event, or individual. Generally, a case study's aim is to get a thorough understanding of a given situation, uncovering patterns and trends, and offering hypotheses for future research. More specifically, case studies can be used to explore a new field or under-researched phenomenon, describe a complex case, test or develop theories, and provide practical insights.

The proposed case study follows a protocol aiming at a transparent methodology to ensure reproducibility and minimize bias. Figure 1 illustrates the overview of the process. It comprises eight steps including, defining the study objectives, defining and selecting participants, developing a questionnaire to gather information, pilot-testing the questionnaire, collecting data through surveys, analyzing the gathered data, summarizing findings and gathering feedback over achieved results.

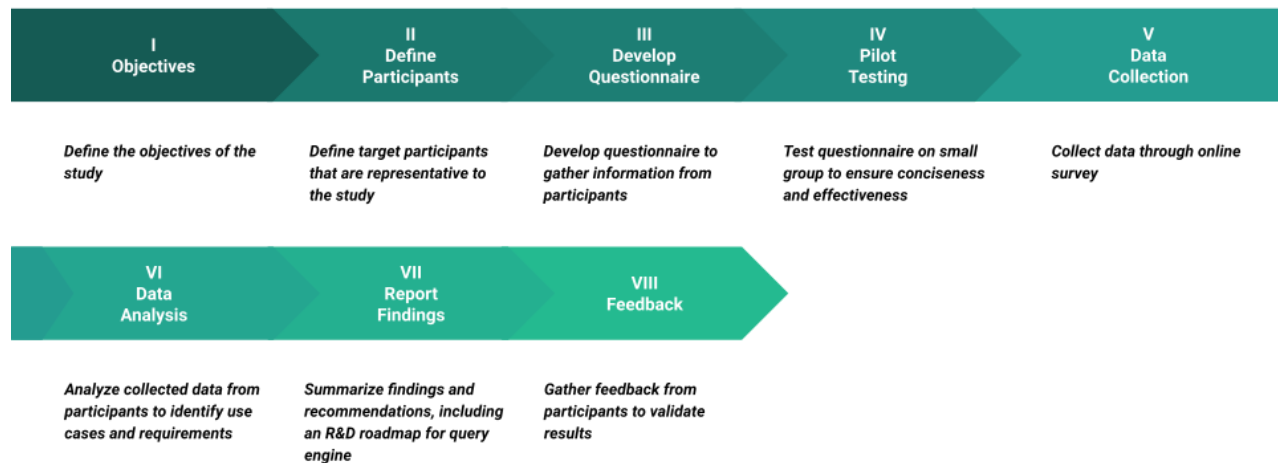


Fig. 1 – Case study methodology.

Concerning the execution of this case study, steps I, II, and III are part of Milestone #2 (Case study for query engine). Details about these steps are presented in the technical report [1].

Steps IV to VIII, i.e. pilot testing, data collection and analysis, report findings, and feedback will be part of Milestone #3 (Polkadot team brainstorming / workshop). The definition of participants and the data collection strategy must be discussed and aligned with the W3F team before their execution (M3).

### 3. Final remarks

The main goal of the proposed case study methodology is to assess the potential of a query engine service for accessing and analyzing data from distributed ledgers. Specifically, the relevance of having an ontology and a controlled natural language supporting this service.

By providing a mechanism to specify queries through a CNL for accessing and analyzing data, it will be possible to enable a wider range of users to participate in distributed ledger ecosystems. As blockchain technology continues to evolve, we believe that tools like the one we are proposing will become increasingly important not only to enhance community engagement but also for enabling the next generation of blockchain-based applications.

The pilot testing and data collection steps should be defined along with the Web3 Foundation grants program team, as part of the next milestone (M3) of our roadmap. Since, we need to define the best strategy for selecting representative participants for surveying as well as the brainstorming / workshop proposed for M3.

# Acknowledgement

This work was supported by a research grant from the Web3 Foundation and is publicly available at [5].

## References

- [1] Milestone 2 – Case study for query engine. Available on github at <https://github.com/w3f/Grants-Program/blob/master/applications/Knowledge-Oriented-Framework.md#milestone-2--case-study-for-query-engine>
- [2] Milestone 1 – Literature review and conceptual framework specification. Available on github at <https://github.com/w3f/Grants-Program/blob/master/applications/Knowledge-Oriented-Framework.md#milestone-1--literature-review-and-conceptual-framework-specification>
- [3] Technical Report – Case Study. Available on github at <https://github.com/mobr-ai/POnto>
- [4] Technical Report – Use Case: Descriptive Scenario. Available on github at <https://github.com/mobr-ai/POnto>
- [5] Final paper version to be available on arXiv