

Roadmap: TruCol

A decentralised collaboration protocol for test-driven development

September 4, 2022

1 Introduction

Welcome, this document presents the roadmap for the TruCol company as well as the estimated costs of the accompanying human labour and other posts. The objective of this document is to provide some basic insight into the order of magnitude of the costs of developing a sustainable variant of the TruCol company such that it is able to generate returns for its potential investors.

Section 2 specifies the assumptions, section 3 describes how the costs are estimated, section 4 presents the projected basic planning and briefly details what each activity in the Gantt chart represents. Section 7 provides some nuance on the accuracy of the estimates, and section 8 summarises the body of information in this document.

2 Assumptions

2.1 Decentralisation Developer Wages

The hourly wage of the developers working on decentralised technology is based on a mixture of ± 3 junior developers working at €100.000,- per year, and 2 senior developers working at €200.000,- per year. This yields an average developer cost of

$$\frac{3 \cdot 50 + 2 \cdot 100}{5} = \frac{350}{5} = €70, - \quad (1)$$

The datapoints used to come to this estimate are the promoted starting wages for Junior Developers/Engineers at Optiver in Amsterdam, Think-cell in Berlin, and a third Zurich company, which all ranged between 80 to 120k at the time of inspection (Around March 2021). No proper datapoint is used to estimate the salary of the senior developers. Previous experience in co-working with senior developers led to an estimate that their hourly contributions are at least twice as valuable as that of a junior developer. Another indicator for the doubling in wage between junior and senior dev may be the hear-say high demand in solidity/decentralisation developers.

The 70,- hourly wage is interpreted as €75, – per hour to be on the conservative side of estimates.

2.2 Website/Platform Wages

The website+API+GUI development is estimated at €40 per hour. This estimate is based on a reduced hourly wage of the junior decentralised technology developers (from €50, – to €40, –). Some of the development costs for these activities may be performed at a lower hourly cost price, this platform development work also contains UX design. And excellent UX design is quite costly, hence the average hourly wage for this estimate is kept at €40, –.

2.3 Business wages

The hourly wages for the business development side of our company is estimated at €35, – per hour. This estimate is based on a reduced hourly wage of the junior platform developers (from €40, – to €35, –).

2.4 Activity durations

The estimates for the durations of the activities for both decentralised technology development as well as ecosystem development are extrapolations of our experience in developing in these disciplines. The business development activities durations are based roughly on estimating what those activities entail and how long it would take to complete them.

3 Cost Model Description

The total costs are computed based on two factors.

- The cumulative amount of human labour hours that are planned to be executed, multiplied with their respective hourly wage costs as specified in section 2.
- A combination of bounty subsidisation and buffer costs of €100.000, – are estimated to generate wide-spread adoption of the TruCol protocol.

4 Results

Figure 1 contains the Gantt chart that is generated to plan the development of the TruCol company. One can observe that several of the development-activities can be performed in parallel, these are accordingly stacked vertically. Dependencies of outputs of activities imply a "stairway" pattern in the Gantt chart.

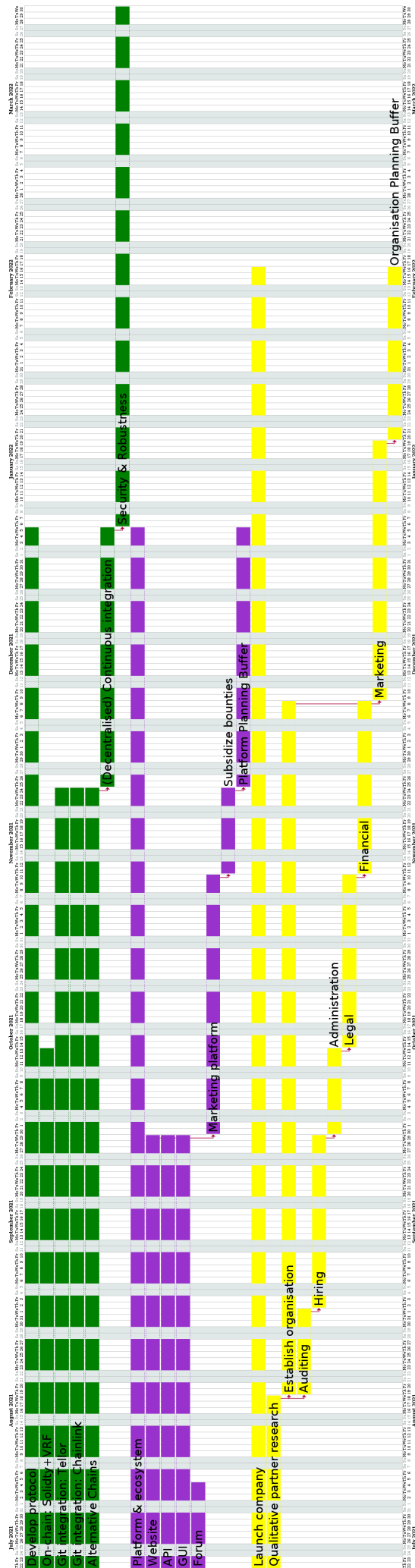


Figure 1: Gantt chart that is generated to plan the development of the TruCol company. (Source code in appendices, and on github.com/trucol/trucol).

The description of the activities can be given as:

4.1 Decentralised Technology Development

- **Develop protocol** - The programming work and documentation work that is required to render the TruCol protocol to a mature and robust state.
- **On-chain: Solidity+VRF** - Finalisation of the Solidity to Solidity implementation of the TruCol protocol implementation that leverages Chainlinks Verifiable Random function (VRF).
- **Git integration: Teller** - Providing a lower-cost option to the users whilst allowing the user to apply the TruCol protocol in practically any programming language using Teller oracles that query Git repository content and (build) status.
- **Git integration: Chainlink** - Same as the Teller option, except using Chainlinks oracles.
- **Alternative Chains** - Implementing the TruCol protocol in alternative chains to facilitate easy use for the users whilst possibly lowering costs and/or modulating the desired levels of decentralisation
- **(Decentralised) Continuous Integration** - Realizing a mature implementation in which the oracles can verify the build status (whether the tests in the smart contract actually passed or not) in a robust fashion. Ideally implementing support for decentralised CIs.
- **Security & Robustness** - A security audit of the TruCol protocol implementations.

4.2 Platform Development

- **Platform & Ecosystem** - Development of the online platform that provides a convenient place for users to use-, discuss- and learn about the TruCol protocol and its various implementations.
- **Website** - Completion of the company website.
- **API** - Application programming interface that allows users to submit contracts using the command line interface (CLI).
- **GUI** - Graphical user interface, that makes it easy and intuitive for new users to start using the TruCol protocol for their applications.
- **Forum** - Environment a-la stack-overflow that cultivates a knowledge base around the use of the TruCol protocol.
- **Marketing platform** - Development of the approach to realise wide-spread adoption of the TruCol ecosystem.
- **Subsidize bounties** - Subsidisation of bounties to attract new users to the platform.
- **Platform Planning Buffer** - A buffer accounting for unknown unknowns/unexpected delays.

4.3 Business Development

- **Launch company** - The administrative and non-technical aspects of growing the TruCol company.
- **Qualitative partner research** - An analysis to identify relevant partners in the growth of our company.
- **Establish Organisation** - organisational aspects of growing the company, with "Auditing, Hiring, Administration, Legal & Financial tasks as its respective subset".
- **Marketing** - Development of the approach to realise wide-spread adoption of the TruCol protocol whilst realising a steady stream of new customers.
- **Organisation Planning Buffer** - A buffer accounting for unknown unknowns/unexpected delays.

5 Cost estimates

After multiplying the amount of labour hours with their respective hourly labour costs, a total estimated labour costs of €470.400, – is generated. This is composed of:

- Decentralised Tech Development: €252.000, –
- Platform Development: €112.000, –
- Business Development €106.400, –

An additional €100.000, – are included for bounty subsidisation and as a buffer, yielding a total expected cost to create a healthy company of roughly $€470.000 + €100.000 = €570.000, –$ which is rounded to approximately .6 Meuro.

6 Sensitivity Analysis

7 Discussion

The hourly wage estimates for the senior decentralised technology development, platform development and business estimates could be refined by using databases of competitive salaries for the respective tasks/work. Furthermore, a refinement of the duration estimates is proposed at the moment the tasks are started, as we expect more relevant information will be available at those times. In addition, external resources should be addressed to check whether any (critical) components are omitted in this Gantt planning.

8 Conclusion

This document presents the planning to develop the healthy TruCol company within the timeframe of roughly 9 months, and documents the assumptions and methods used to generate this planning. The main tasks in this planning are composed of decentralised technology development, TruCol platform development and business development. A total labour cost of roughly €470k is estimated, and another €100k is estimated for bounty subsidisation and as a buffer.

At the end of this planning, the TruCol company is expected to sustainably operate, generating ROI. Our aim is to gradually increase the cultivation of the diversification potential of the TruCol protocol at this point, whilst starting to develop a strategy to develop our own in-house automation/AI-engine based on the dataset that we continuously grow.

References

A Appendix __main__.py

B Appendix Main.py