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# Project Vision

## Introduction

In today’s modern world computing is becoming more fundamental to everything we do, and with that comes a focus on creating highly available and distributed services. With high availability services, many computers work together to make a service achieve the greatest uptime possible, this includes being fault-tolerant to various outage scenarios. Consensus algorithms are a foundational part of building these systems.

Consensus algorithm work by ensuring all nodes in a cluster are in agreeance on the current state of the service, and continues uptime of the service during node failure or network link failures between the nodes.

The vision for this project is to create and publish a fully featured implementation of a Consensus Algorithm as an open source code library which would allow for application developers to implement consensus/fault-tolerance into their services as easily as possible.

The benefit to an implementing company could be twofold; firstly, solving the problem of increasing uptime of a critical service, and secondly by taking advantage of consensus distributed consistent log feature they can maintain service uptime whilst offloading server computation to the end user devices, directly saving hosting costs for the company.

*Create a fully featured open source code library to allow the most amount of developers access to adding consensus features as easily as possible to their projects*

## Positioning

### Problem Statement

Consumer driven requirements for always available services has pushed companies to eliminate any downtime from their offerings. These downtimes impact user experience as well as trust in their platform.

When consumers have poor experiences, and lose trust in a service they may consider alternatives solutions for the needs. This impacts the growth of a company, as well as their ability to extract the financial benefits of scale from having a large user base.

Companies which minimise or eliminate any impact from downtime for their end users may better compete in the marketplace for their services.

### Product Position Statement

Our proposed project targets developers who are responsible for implementing services which require high uptime. This open source library aims to fill the market position of a consensus algorithm which focuses on ease of integration and which is written in the language the developer is most likely to be using.

The benefits to a company would include reducing overall product development time, reducing the total cost of developing a highly available service, and by reducing the need/costs for consensus specialists to implement the desired feature. Reducing these costs will also lower the barrier for entry for companies which previously could not have reasonably implemented this.

Driving down development overhead costs can not only improve a company’s competitiveness in their market and allow them to capture the cost of unnecessary expenditure, the reduction of development time can also reduce the financial risk that companies accept during their projects which implement this technical feature.

## Stakeholder Descriptions

### Stakeholder Summary

|  |  |  |
| --- | --- | --- |
| **Name** | **Description** | **Responsibility** |
| Project Team | Our team; functioning as developers, as well as project sponsors and management | * Ensuring system is maintainable * Ensuring market demand * Ensuring features are working as desired * Ensuring system is reasonably secure * Monitoring of project development progress Investing their time into development |
| Team Leader/CTO | The individual who is responsible for selecting and assessing technologies that may be beneficial for inclusion into their services | * Assess the amount of time and cost of implementation of this library as their feature * Confirmation of the benefits of the library matching the business requirements * Comparison of alternative solutions for their requirements * Proposing library as solution for their requirements to project sponsor * Managing the project of implementation |
| Project Sponsor | The individual who has requested the inclusion of the feature into their service, and provide the financing for implementation | * Assess the proposal by the Team Leader/CTO in the context of cost to benefit to the company and realization of benefits * Responsible to the business for the success of the project and reasonable use of expenditure * Responsible for sponsoring the resolution of the business case |
| Developer - Consensus Specialist | The individual in the Project Team whose responsibility is to learn | * Responsible for the intimate knowledge of the library * Responsible for technical practical knowledge to understand consensus algorithm and implementation * Liaising as the specialist consult inside the Project Team for practical implementation of the library into the service |
| Developer | The individuals responsible for the integration of the library into their service | * Understanding their existing service such that they can liaise with the Consensus Specialist to plan how to implement * Implementing the feature into their service |
| End user | The end users who is pressuring the company for highly available service | * Not applicable |