IMPLEMENTATION OF A 5G TESTBED WITH O-RAN AND SOFTWARE DEFINED RADIO

Proposal Presentation - Internal

Apr. 09 — 2024

Agenda

Scope
Requirements
Schedule
Project Methodology
Risks
Cost

Scope & Objectives

Develop a 5G indoor testbed with open-source software-defined radios while following O-RAN standards.

Aim to overcome LTE vendor lock-in and demonstrate feasibility of the project.

Increase accessibility of the technology, encouraging interoperability and innovation.

Requirements

Demonstration

Implement the 5G base system, and demonstrate real-time communication between two connected devices

Demonstration

Technical Req

- Ettus Research B205-mini SDR module
- srsRAN software suite
- Test computer running Ubuntu 22.04

Demonstration

Technical Req

Deliverables

- Fully implemented testbed
- User guide and documentation
- Docker image for ease of replication

Demonstration

Technical Req

Deliverables

Nonfunctional Req

- Performance
- Reliability
- Security

Project Schedule

Sprint 1

Upskilling and research

Sprint 2

Startup; initial configuration

Sprint 3

System & Architecture Design

Sprint 1

Upskilling and research

Sprint 2

Startup; initial configuration

Sprint 3

System & Architecture Design

Sprint 4

Hardware Configuration

Sprint 5

Planning of Documentation

Sprint 6

Software Install and Setup

Sprint 1

Upskilling and research

Sprint 2

Startup; initial configuration

Sprint 3

System & Architecture Design

Sprint 4

Hardware Configuration

Sprint 5

Planning of Documentation

Sprint 6

Software Install and Setup

Sprint 7

First round of testing and integration

Sprint 8

Network configuration

Sprint 9

Functional testing and validation

Project Schedule

Sprint 1

Upskilling and research

Sprint 2

Startup; initial configuration

Sprint 3

System & Architecture Design

Sprint 4

Hardware Configuration

Sprint 5

Planning of Documentation

Sprint 6

Software Install and Setup

Sprint 7

First round of testing and integration

Sprint 8

Network configuration

Sprint 9

Functional testing and validation

Sprint 10

Performance evaluation and optimisation

Sprint 11

Documentation finalisation and client approval

Methodology

Initiation

Identify the scope of the project & hold kick-off meetings with key stakeholders

Initiation

Planning/Analysis

- Identify requirements & gather research
- Establish a team plan
- Create a comprehensive project proposal

Initiation

Planning/Analysis

Logical Design

- Determine design specs
- Risk modelling
- Knowledge transfer and upskilling

Initiation
Planning/Analysis
Logical Design
Physical Design

- Evaluate tools & technology
- Design the network topology
- Focus on security

Initiation

Planning/Analysis

Logical Design

Physical Design

Implementation

- Compile documentation
- Demonstrate the testbed
- Finalise other deliverables

Risks

A

Lack of Resources

If difficulty procuring hardware occurs, the team will liaise with the client/mentor to obtain necessary hardware.

A

Lack of Resources

B

Hardware Incompatibility

The team will collaborate to troubleshoot and debug any incompatibility that should arise between hardware, software, and operating systems used.

A Lack of Resources

B Hardware Incompatibility

C

Lack of software support

srsRAN software may not have adequate support documentation for our purposes. The team will synthesize online resources and leverage expertise and knowledge to troubleshoot the necessary configurations.

A Lack of Resources

B Hardware Incompatibility

C Lack of software support

D

Communication issues with stakeholders

The team will combine efforts to set up meetings and establish communication with the client/mentor, however, this may prove difficult due to busy schedules.

A	Lack of Resources
B	Hardware Incompatibility
C	Lack of software support
D	Communication issues with stakeholders
E	**Lack of group contact**

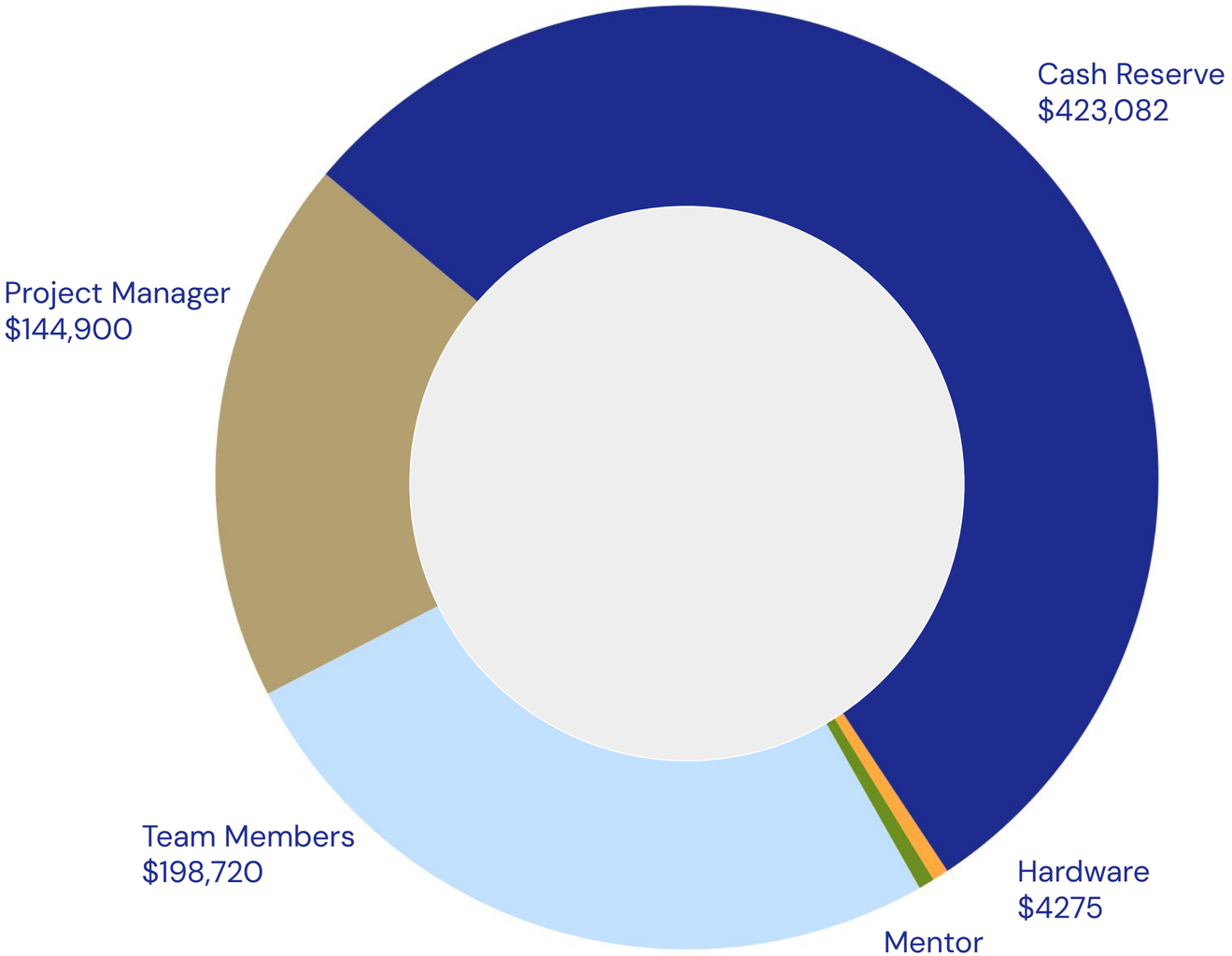
The team will schedule regular meetings between each other and keep in contact via Teams, ensuring that all members are present whenever possible.

Cost

$775,651

Total project cost estimate (Incl GST)

5G Testbed



Note:
Costs are estimates only, and are partially based on hypothetical figures provided by AUT

Thank you

Proposal Presentation - Internal
Apr. 09 — 2024