

# 1 Introduction

Context/Need/Gap/Hero Funnel. sample citation: [matthis'retinal'2022]

- Our current institutions of education and scientific research are inequitable, exclusionary by design, and ill-equipped to address the existential threats and transformative opportunities presented by the rise and spread of high technology through a globally interconnected world.

- The current system is built around a massive concentration of resources within Ivory-tower institutions, with research occurring in siloed 'cottage industries' driven by student labor and debt within a gerontocratic ponzi-scheme competition based hierarchy predicated on the assumption of lateral competition predicated on assumptions of false scarcity.

- To face the rising challenges and seize the opportunities, we must develop new institutional structures based on a commitment to the values of *Universal Access and Universal Design*.

- *In this proposal, we present a potential model of an Open Source Ecosystem (OSE) as a prototype organization structured in service of these needs.*

- *Specifically, we describe a plan to buttress and shape the burgeoning community of users, developers, students, and educators forming around the FreeMoCap Project (FMC) into a self-sustaining and expansive Open Source Ecosystem (OSE).*

- *Our plan comprises 3 inter-woven foci - A core software platform and framework for the measurement, analysis, and visualization of human and animal movement (FMC-Core) - A broad and diverse userbase representing wide array of backgrounds, interests, experience levels, and geographic spread (FMC-Community) - A self-sustaining organization to support a dedicated team of core maintainers who ensure the healthy growth and long-term stability of the ecosystem (FMC-Foundation)*

## 1.1 Intellectual Merit

- *Enabling tech-forward integrative research - Rosetta Stones and Systems Engineers - Training nextgen technowizards and cross-disciplinarians*

## 2 Broader Impacts

- *\*\*Meager success:\*\* - New useful tool - New body of research related to human/animation perceptuomotor control - Education tools and strategy - \*\*Expected outcomes:\*\* - Support and sustain the growing community of 'freemocap' users, loosely organized around a shared love of the measurement, investigation, analysis, and expression of human and animal movement (broadly construed)*
- *Sustainable organization and vibrant ecosystem existing as a proof-of-concept alternative organizational approach to broadscale academic research, education, and training - \*\*Idealist future:\*\* - Iterative solutions on 'project-scale' strategy produces a vibrant \*\*ecosystem of ecosystems\*\* which fundamentally changes the face of education and scientific research.*

## 3 Objectives

*Like Specific Aims - what are the primary activities/deliverables?*

## 4 Current Context

### 4.1 Technological Context

### 4.2 Social Context

### 4.3 Ethical Context

#### 4.3.1 The Problem of Universities

#### 4.3.2 The Problem of Journals

#### 4.3.3 On Gardens and Cottage Industries

### 4.4 Need and Gap

## 5 Objectives and Long term vision

### 5.1 Aspirational Goals

#### 5.1.1 FreeMoCap =, Best MoCap (monotonically increasing performance)

#### 5.1.2 All-levels accessible (universal access)

#### 5.1.3 Covert Education

#### 5.1.4 Generative Organizational Structure

## 6 Guiding Principles

### 6.1 Universal Design / Universal Access

### 6.2 No artificial scarcity

### 6.3 Community Focus

### 6.4 Aggressively Open Source

## 7 The FreeMoCap Project (FMC)

### 7.1 Artifacts

#### 7.1.1 FreeMoCap Softwares

FreeMoCap Core Software (FMC-Core)

Sub-Skelly Softwares

7.1.2 Documentation and Educational Material

7.1.3 Datasets and derived models

7.2 The FreeMoCap Community (FMC-C)

7.3 The FreeMoCap Foundation (FMC-F)

7.3.1 Organization

7.3.2 Governance

7.3.3 Responsibilities

7.3.4 Licensing Model

## 8 Planned Activities and Objectives

8.1 Ecosystem establishment and growth

8.1.1 Userbase Analysis/Engagement

8.1.2 AI Pseudo-Mentorship (SkellyBot)

8.2 Community Building

8.2.1 Annual Workshop/Conference: FreeMoCamp/Con

8.2.2 Community Challenges

8.2.3 Community Grants Program

8.2.4 Gamification and achievement-based badges

8.3 Organization and Governance

8.3.1 Build admin infrastructure

8.3.2 Develop SOPs

8.3.3 Establish core maintainer roles and support

8.3.4 Develop 'Skelly Enhancement Proposal'[SEP] system

8.4 Continuous Development, integration, Evaluation

8.4.1 Development

8.4.2 Integration

8.4.3 Evaluation

Tests.

Validation.

Diagnostics.

## 8.5 Sustainability

### 8.5.1 Goals and Metrics

Community Growth.

Organizational Stability.

Software Performance.

Revenue streams.

## 8.6 Security and Privacy

### 8.7 Security

### 8.8 Privacy