FreeMoCap

The Manifesto

Volume 1 of 3

"The world that is is not the world that has to be."

The FreeMoCap Foundation

February 2026

The tools of science belong to everyone.

The barriers are artificial.

We can build differently.

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I The Problem

1 The Current Order

A set of interlocking institutions controls who gets to produce knowledge, who gets to use scientific tools, and who gets to participate in the technological development of our society. These institutions—universities, academic journals, proprietary software companies, professional associations, funding agencies—did not conspire to create this arrangement. They do not need to. Each reinforces the others by operating according to its own internal logic. The result is a system that excludes the majority of the world's population from meaningful participation in science and technology.

This exclusion is not a bug. It is the system working as designed.

1.1 The University

The modern university sells credentials. It packages education as a consumer product, prices it at a level that requires life-altering debt, and justifies the cost by gatekeeping access to research tools, professional networks, and the credential itself. The credential is valuable primarily because access to it is restricted. The restriction is the product.

Faculty are incentivized to produce publications, not knowledge. The research that gets funded and published is not necessarily good research—it is strategically positioned research. It advances careers. Whether it advances understanding is secondary.

The structure requires a permanent surplus of aspiring academics who will never obtain permanent positions. Their labor—as graduate students, postdocs, adjuncts—sustains the system. Their failure is not an accident. It is a structural requirement.

1.2 The Journal

Academic publishing locks publicly funded research behind paywalls. Researchers produce the work. Researchers review the work. The publisher charges the public to read it. The justification is quality control. The function is rent extraction.

1.3 The Proprietary Tool

Scientific instruments and software are sold at prices calibrated to institutional budgets. A motion capture system costs tens of thousands of dollars—not because it costs that much to produce, but because institutions will pay that much. The price is a function of market power, not manufacturing cost.

When the tool is expensive, only funded institutions can afford it. When only funded institutions can afford it, only people within those institutions can use it. When only people within institutions can use it, the institution's claim to be necessary is reinforced.

The tool does not need to be expensive. The expense serves the institution, not the user.

1.4 The Ideology

These arrangements are sustained by a set of beliefs that have become common sense:

To be a real scientist, you need institutional affiliation. Research is not valid unless published in peer-reviewed journals. Education requires accredited institutions. Professional tools cost money because quality costs money. People outside institutions cannot do real research because they lack training and oversight.

These beliefs feel like descriptions of reality. They are not. They are descriptions of a particular arrangement of power that benefits particular groups. The arrangement could be otherwise. The beliefs prevent people from seeing that it could be otherwise.

This is what hegemony means: not a conspiracy, but a set of assumptions so deeply embedded that they feel like nature.

2 The Technology Problem

Every time a new technology emerges, a familiar process begins. Corporations race to capture it. They build moats—patents, proprietary standards, network effects, regulatory capture, walled gardens. Once the moat is built, they extract rent. Access to the technology becomes access to a toll booth.

This has happened with operating systems, social networks, cloud computing, search, and now artificial intelligence. The pattern is consistent because the incentive is consistent: capture a resource, restrict access, charge for entry.

The result is a world in which the tools that shape society are controlled by a small number of entities whose interests are not aligned with the interests of the people who use those tools. Users are not customers. They are the product. Their attention is sold. Their data is harvested. Their dependency is cultivated.

Free and open source software is the only structural counter to this dynamic. When the code is public, the moat cannot be built. When anyone can modify the tool, dependency cannot be cultivated. When the tool is free, the toll booth does not exist.

This is not idealism. It is an observed fact. Linux runs the infrastructure of the internet. Blender competes with software that costs thousands of dollars a year. Wikipedia replaced the encyclopedia industry. These are not charity projects. They are demonstrations that commons-based production can outperform proprietary production.

The question is not whether it works. The question is whether it can be extended.

3 The Stakes

We are entering the AI era. Artificial intelligence will reshape every domain of human activity—work, education, governance, surveillance, warfare, medicine, science, art. The question of who controls these systems is the central political question of our time.

If AI systems are controlled by corporations, they will serve corporate interests. If they are controlled by governments, they will serve state interests. If they are controlled by the people who use them, they might serve human interests.

The window for building alternatives is open. It will not stay open forever. As AI systems become more deeply embedded in social infrastructure, the cost of replacing them increases. The moats get deeper. The dependency gets harder to break.

The skills required to build, modify, and govern AI systems are currently concentrated in a small population. Expanding that population—teaching more people the technical competency to engage meaningfully with these tools—is not a nice-to-have. It is a precondition for democratic self-determination in the twenty-first century.

Free and open source software is the vehicle for that expansion. Not the only vehicle. But the most proven one.

II The Project

4 What FreeMoCap Is

FreeMoCap is a free, open-source, markerless motion capture system. It uses computer vision and machine learning to track human bodies in three-dimensional space using standard webcams. No specialized hardware. No institutional affiliation. No cost.

The software produces research-grade recordings of human movement. The same tool serves a federally funded biomechanics lab and a teenager in their bedroom. The same tool serves an indie game designer adding animation to a zero-budget project and a clinician assessing a patient's gait. The same tool serves a dance studio and a robotics class.

As of 2026, FreeMoCap has approximately 10,000 users across more than 115 countries.

This is what it does. What it means is something else.

5 What FreeMoCap Means

On the list of global inequities, inaccessibility of markerless motion capture is not high. But it is on the list. And solving it demonstrates something.

It demonstrates that research-grade scientific tools can be free. That institutional affiliation is not a prerequisite for producing knowledge. That the barriers to scientific participation are artificial. That when you remove the barriers, people use the tools. Ten thousand people in 115 countries use the tools.

FreeMoCap is a proof of concept. The concept it proves is that another arrangement is possible.

If a small team can build a motion capture system that competes with products costing tens of thousands of dollars, what else can be built? If the model works for motion capture, what other scientific tools can be liberated? What other gatekeepers can be routed around?

The software is Stage 1. The actual project is the demonstration that the current arrangement of who gets to do science, who gets to use tools, and who gets to participate in technological development is not the only possible arrangement.

6 Design Principles

6.1 Build for the Worst Hardware

If the software works with a ten-dollar webcam, it works with everything. If it only works with a ten-thousand-dollar camera, it works for the people who can afford ten-thousand-dollar cameras. Build for the garbage cameras. Accessibility is a design constraint, not an afterthought.

6.2 The Tool Teaches

FreeMoCap is designed to make its own workings visible. A user who captures their first skeleton should feel the understandings beginning—not because anyone is lecturing them, but because the tool's architecture invites comprehension. Computer vision, 3D geometry, coordinate systems, calibration—these concepts emerge from use.

The tool does not require understanding to operate. But it rewards understanding. There are threads to pull. There are doors to open.

6.3 No Gatekeeping

No credentials required. No payment required. No institutional affiliation required. No approval required. Download it and use it.

The instinct to restrict access—"be careful not to make it too easy, otherwise people won't understand what's going on"—is the gatekeeping instinct dressed up as pedagogical concern. We reject it. Making a tool easy to use does not prevent understanding. It enables it.

6.4 Gifts Freely Given

It is possible to build tools that perform in the ways they should, that just work and don't try to take anything from you and just give to you. It is possible to give gifts freely to the world without extracting resources as a result.

This is not charity. This is a model of production. The gift economy of open source is not a temporary arrangement waiting to be monetized. It is an alternative to extraction. It works. It has been working for decades.

III The Movement

7 Beyond the Software

FreeMoCap is not just a software project. It is an attempt to build an alternative institution—one that operates according to different principles than the institutions it challenges.

The open source community is what the scientific community pretends to be. Science claims collaboration, openness, shared knowledge, building on previous work for the common good. The open source community actually does these things. The code is public. The development is transparent. Anyone can contribute. Anyone can benefit.

FreeMoCap inherits this model and extends it. The software is the entry point. The community is the project.

7.1 Who This Is For

Not just scientists. Not just animators and game designers. Not just programmers.

Athletes, coaches, dancers, performers, educators, hobbyists, tinkerers, students—anyone who might have a reason to record human movement. And everyone has a reason to record human movement.

More broadly: anyone who believes that scientific tools should be accessible, that knowledge should be shared, that technology should serve its users rather than extract from them. Anyone who wants to learn how things work rather than being told to trust the experts.

7.2 The Ladder

A person downloads the software. They capture a skeleton. They have a question. They find the Discord. Someone answers it. They come back. They answer someone else's question. They write a tutorial. They file a bug report. They contribute a fix. They maintain a module. They help govern the project.

This is not automatic. It has to be designed. Every rung of that ladder has to be built and maintained. The transition from user to community member to contributor to leader requires intentional infrastructure.

Most open source projects fail at this. They have a vast passive user base and a tiny burned-out maintainer core and nothing in between. We intend to do better.

8 What We Are Fighting

We are fighting a system, not a villain.

The system is the interlocking set of institutions that control who gets to produce knowledge and who gets to use tools: universities that sell credentials, journals that paywall publicly funded research, companies that price tools to institutional budgets, professional associations that restrict who counts as qualified, and funding agencies that determine what research gets done.

Each institution operates according to its own logic. Together they produce a world in which the ability to do science is rationed by wealth, geography, and institutional access.

We are also fighting an ideology: the set of beliefs that makes this arrangement seem natural. The belief that expertise requires formal training. The belief that quality requires expensive tools. The belief that credentials protect the public rather than protecting the credentialed.

These beliefs are not lies. They contain grains of truth. Expertise matters. Quality matters. But the conclusions drawn from these truths—that therefore tools should be expensive, access should be restricted, and participation should be gatekept—do not follow. They serve the interests of gatekeepers.

We are not asking permission to participate. We are building the tools that make permission unnecessary.

9 What We Are Building

We are building a demonstration that another way is possible.

If FreeMoCap survives—if a small team can sustain itself building free software without institutional backing or corporate capture—that survival becomes a case study. A model. Proof that it can be done.

If the model is replicated—if other researchers, developers, and educators follow similar paths, building free tools in their own domains—then the individual projects become a movement. A network of people building alternatives to the extractive institutions that currently control knowledge production.

If the movement grows—if enough people gain the technical competency to engage with open source communities and build their own tools—then the power dynamic shifts. The moats get breached. The toll booths get routed around. The gatekeepers become irrelevant.

This is the long game. It does not happen quickly. It does not happen through dramatic gestures. It happens through sustained work: building tools, building communities, building the infrastructure that makes independence possible.

10 The Immediate Work

The immediate work is survival. A small team sustaining itself while building free software that does not charge subscription fees.

The near-term work is growth. More users, more contributors, more communities adopting the tools. Not growth for its own sake, but growth that expands the base of people who see themselves as participants rather than consumers.

The long-term work is transformation. Changing what seems possible. Making it common sense that scientific tools should be free, that institutional affiliation should not be a prerequisite for research, that technology should serve its users.

This is a war of position, not a war of maneuver. There is no storming of the gates. There is the slow, steady work of building alternatives until the alternatives become the default.

IV Principles

11 What We Believe

I. Scientific tools belong to everyone. The barriers to access are artificial. Removing them is not charity. It is correction.

II. The open source community is what the scientific community pretends to be. We build on that foundation.

III. Build for the worst hardware. If it works on a ten-dollar webcam, it works for everyone. Accessibility is a design constraint, not a feature request.

IV. The tool should teach. Software that makes its own workings visible produces understanding. Software that hides its workings produces dependency.

V. No gatekeeping. No credentials required. No payment required. No institutional affiliation required. The instinct to restrict access, however well-intentioned, is the enemy.

VI. Community over code. The software exists to serve the community. The foundation exists to serve users. If the community dies, the software is irrelevant.

VII. Gifts freely given. It is possible to build and give gifts to the world without extracting resources. This is not naïve. This is a proven model of production.

VIII. Technology is political. Who controls the tools controls the future. Building free tools is a political act. Using them is a political act. Teaching others to build them is a political act.

IX. Survival first. You cannot change the world if you cannot pay rent. Sustainable models for funding free software are not a distraction from the mission. They are the mission.

X. The world that is is not the world that has to be. Even though the path is forever, the work is there. The handles are there. The shovels are there. There is a way to start.

12 What We Will Do

We will maintain and improve FreeMoCap as free, open-source software. We will never charge for the core tool. We will never restrict access based on institutional affiliation, credentials, or ability to pay.

We will build a community that is larger than the software. We will design intentional pathways from user to contributor to leader. We will resist the tendency for open source projects to collapse into a burned-out core and a passive periphery.

We will document everything. Not just how the software works, but why it was built, what it is for, and what principles govern its development. Transparency is not a virtue we perform. It is a structural requirement.

We will connect to adjacent movements. Right to repair. Digital sovereignty. Open access to research. Educational equity. These are not separate fights. They are the same fight on different fronts.

We will figure out how to survive. How a small team building free software can sustain itself without institutional backing or corporate capture. If we figure it out, we will share the model.

We will not wait for permission.

Even though the path is forever, the work is there.
The handles are there. The shovels are there.
We know how to pull. We know what the right direction is.
We know how to dig the holes that need to be dug.
And even if the distance looks insurmountable,
there is a way to start.