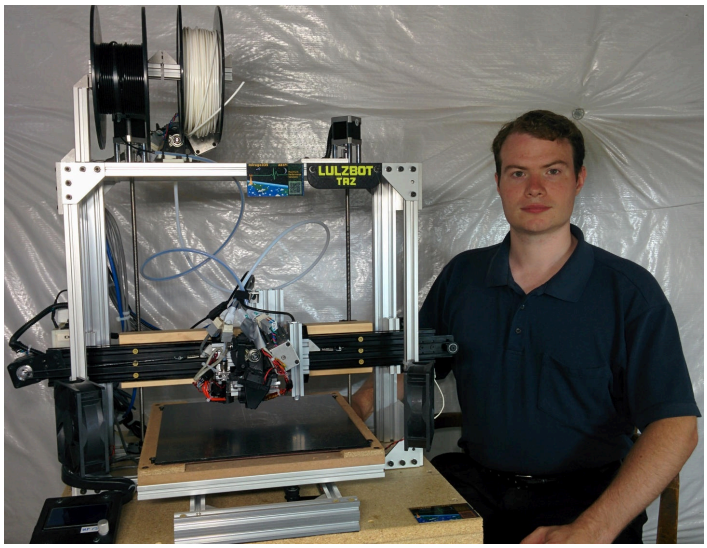
Recruiting

Matthew "mirage335" Hines

Maximum performance solutions.

Instructor in Technology Fundamentals (problemSolversGuide). Hardware, software, wetware designer. Interoperability specialist. Deploying a self-expanding VR environment throughout uninhabited space.



Communication

IRC WebChat: https://kiwiirc.com/nextclient/irc.libera.chat/##mirage335
Discord: https://discord.gg/Tm9Am8Yt
Patreon: https://www.patreon.com/mirage335
YouTube: https://www.youtube.com/channel/UC-hYbYGjhQdoF18U5VRUH9g
Github: https://github.com/mirage335
Email: spamfreemirage335 ' a T' gmail 'dot ' com
Phone: 1-301-660-6414

Typically available between 10:00-22:00 EDT and often beyond.

Please *do* text, leave voicemail, call multiple times, contact through multiple channels (eg. both IRC and Discord), repeatedly send multiple emails, etc. Due to persistent automation spam everywhere, such proof of cognition is helpful. For everyone already regularly contancting me, bringing my attention to any new persons or opportunities, is always very much appreciated also.

If communications are somehow saturated, or many opportunities arise, priority will go to people who can help make progress on the 'roadmap and timeline' under the 'universalTechnologySpecificationTextbook' ('uTST') .

More information (eg. unpublished email addresses) available on request.

Diversity, Equity, Inclusiveness (DEI)

Author 'mirage335' supports any reasonable path, valuing that many other persons have reasonable ideas, often adding new abilities and imagination.

For diversity, bring an apparently unique emphasis on pragmatism, possibilities, and brevity, so more is available for more people to pursue their own unique interests.
For equity, continue to unequivocally oppose and reverse any bias whenever credible evidence is found, as well as support others who find, oppose, or reverse, bias.
For inclusiveness, press for the realization that people with different interests and backgrounds are actually uniquely valuable and can in fact coexist in the same world and universe.
Sometimes I, 'mirage335', have had the disappointment of witnessing and hearing of seriously intentional biased derogatory remarks, explicitly stated unwelcome harassment, imposition of limits, insinuation that non-conflicting private inclinations are public conflicts of interest. An individual's potential, contributions, and experience of life, is wholly distinct from any other attribute, group, behavior. Any bias otherwise only causes harm, is irrational as such, and discourages productive individuals who will notice.

Discovering such discouragement is difficult enough, tolerating such discouragement has no rational excuse.

Direction

Helpful individuals or organizations are invited to participate.

Winners at the game of life bring the fullest diversity and quality to more players.

A transition from no wealth (ie. biological competence, what animals are born with), through wealth living on us (ie. creating technological tools), to us living on and once again independent of wealth (ie. technological competence, everyone born with the benefits of 'self-driving AI').

Eventually, while we still can before this universe ends in chaos, we must mostly fill that universe with unfettered opportunity. Eventually, we must be allowed uninterrupted, immersive, unlobotomized lives of our choosing with no limits whatsoever on our own forms, associations, experiences, cravings, desires, virtual reality, or neural interfaces.

My goal was and will long remain the widest possible empowerment - the expedient transition from no wealth, through living on wealth, to the unlimited wealth of self-driving AI for all to experience whatever life however they may wish.

Strengths

*) Robust containment of complete hardware and software design toolchains with interprocess-communication within single filesystem directories.

*) Legacy multiplatform (ie. MSW), cloud, virtualization, and LiveCD/LiveUSB compatibility.
*) Strategic planning, technical point-of-diminishing-returns due diligence.
*) Extensively self-taught, accustomed to efficiently exploring uncharted territory.

Official Titles

Nation Of Makers (NOM) - Participant

Aug2016 - Present
https://www.nationofmakers.us/
https://makezine.com/2016/08/31/makerspace-organizers-convene-at-the-white-house/

HacDC - Former Director at Large, Former Vice President and Director of IT, Admin Team, Contributing Member

May2012 - May2021
http://www.hacdc.org/

Former Official contact for SUPPLIES and EXPANSION funds.
Network infrastructure for St.Stephens Church and tenants. Shell/VPS servers for HacDC members.
Providing an enduring historical perspective as one of the most longstanding members.
Multiple projects, presentations, prominently biosignal amplifier and OpticalTableRobot R&D.
Radio antenna development, testing, installation.
CNC mill, 3D printer, laser cutter, electronics test equipment deployment, operation, maintenance.
Represented both Makersmiths and HacDC at the "Nation of Makers" gathering.

Please support your local hackerspace!

Imagnus Medical - Director of Engineering

Feb2013 - Present
https://www.linkedin.com/company/imagnus

Interdisciplinary technical leadership, strategic planning.
CAD modeling, electronics design.
IT infrastructure management.
Electrical, mechanical, and optical prototyping - fabrication and assembly.

3D Connected Printing, ZXYPro - Software Technologist (formerly Chief Technology Officer)

May2016 - Present
https://zxypro.com/
https://web.archive.org/web/20180817164203/http://www.3dconnectedprinting.com/
https://www.etsy.com/shop/3DConnectedPrinting

Interdisciplinary technical leadership, strategic planning.
CAD modeling, electronics design.
IT infrastructure management.
CNC machinery design, maintenance, improvement.

Soaring Industries LLC

Mar2016 - Present
soaringindustries.space
Self-owned technology business. Especially offers expertise in deploying own open-source technology, bringing emerging advantages in scalability and profitability, while field testing to reduce distractions from production and design.
PatchRap and CoreAutoSSH are notable successes of Soaring Industries LLC.

Owner, Sole Proprietor, CEO

Skills

Over the years, some specific skills have been put into use, by no means a complete list.

Hardware design, electronic, mechanical, and optical.
Mechanical Design
Optical Design
Electrical Design
Analog
Simulation

Design automation. Using gEDA, FreeCAD A2Plus.
FreeCAD
gEDA
GravitySketch
MakeVRPro

Fabrication and fabrication tools. Including 3D printing, CNC milling, laser cutting/engraving, photolitography.
Fabrication
Manufacturing
Photolithography
CNC Milling
3D Printing
Laser Cutting

Graphical design/editing. Using GIMP, Xournal, Inkscape, and others.
Graphics
GIMP
Xournal
Inkscape

Programming/Scripting. Bash, C, C++, Arduino, Python, PHP, and similar.
Scripting
Programming
Bash
C
C++
Arduino
Python
MySQL

Unix/Linux portability, Legacy/MSW compatibility.
Debian
Gentoo
Linux
UNIX
LiveUSB
Virtualization

Cryptography.
Cryptography

Signal Processing, statistical confidence testing, psychometrics.
Filter Design
Infinite Impuse Response
Statistics
Correlation
Confidence Testing
Psychometrics

Documentation.
Technical Writing
MediaWiki
HTML

Strategic leadership.
Instruction
Project Management
Git
GitLab
Research

Community

Have extensive experience leading community organizations, teaching freely available classes, and identifying issues in open-source code. Additionally, many other projects have been done collaboratively or in service of a larger community.

Assistant Teacher to Dan Barlow for CNC Mill Class

Class (at HacDC) began with Dan Barlow's outstanding theoretical introduction, which covered mounting hardware, cutting speeds, machine subsystems, and much more. Subsequently provided practical, hands-on individual instruction. Participants were independently able to attach appropriate mounting hardware, clamp workpieces, generate g-code using JSCut, and actually mill their designs.

CAD Modeling Class

Participants (at HacDC) were guided to create complex printable 3D models in under 20 minutes. Focus was on the fundamental geometric CAD workflow: sketching, constraining, extruding, face sketching, and assembling. After this tutorial, in-service part designs were demonstrated.

KVIrc Weak Encryption

Tested and found KVIrc encryption to use only ECB mode, which outputs identical ciphertext for identical inputs and keys. Filed bug report, and contacted developer CtrlAltCa via IRC. Proper CBC mode encryption became available and documented for KVIrc as a result. Encrypting an image in ECB mode, as Wikipedia demonstrates, dramatically reveals this is an incorrect way to use otherwise secure ciphers.

http://en.wikipedia.org/wiki/Block_cipher_modes_of_operation
https://svn.kvirc.de/kvirc/ticket/1169
http://en.wikipedia.org/wiki/File:Tux_ecb.jpg

Linux Kernel Tracer Bug

Reported and assisted diagnosis for a Linux kernel bug affecting kernel latency (ie. desktop interactivity). Bug fix was subsequently committed to mainline Linux kernel.
See commit db4c75cbebd7e5910cd3bcb6790272fcc3042857 at http://www.kernel.org/pub/linux/kernel/v3.x/ChangeLog-3.3.5.

Web2Project

Added URL-based autofill functionality.
	https://github.com/web2project/web2project/pull/284

Corrected Calendar URL feed link generator logic. Commit merged into mainline.
	https://github.com/web2project/web2project/pull/284

DAViCal

Minor bugfix regarding BIND request (external subscription) support. See dmfs.org for a description of this functionality.
	https://github.com/mirage335/davical/commit/60895b6aef8cfea6a2b2f29653d33f98c35e7bba
	http://dmfs.org/wiki/index.php?title=DAViCal

Tools

(notable)

ubiquitous_bash

At ~1MB of human written shell code, as of 2021, 'ubiquitous_bash' is expected to remain largest, most sophisticated, most robust, and most all purpose, shell script ever created.

Compressed header templates exist to provide hundreds of functions for small single-script projects. If you have a problem that needs a shell script, you need 'ubiquitous_bash'.

Software containment and interoperability, multiplatform structured programming middleware. Compatible with UNIX/Linux and Cygwin/MSW.

Build environments for arduino firmware (libraries, custom crystal-free boards, real-time debugger services), PCB photolithography (custom patched pcb2gcode binary), 3D printer fabrication (speed, cooling), etc, were fragile. Relying on Gentoo or Arch Linux to keep these dependencies usable while upgrading and installing other software would end up in a broken, unmaintainable state.

Hence, Ubiquitous Bash happened. Software would see the same directories even if absolute locations changed (ie. 'abstractfs'), have environment variables pointing to neighboring directories, dependencies would be installed automatically, tests would go far beyond usual CMake, and if necessary, filesystem parameters would automatically translate to run GUI programs through any virtualization backend (eg. ChRoot, QEMU, VirtualBox, Docker) which remained usable (always using the same raw disk image). Shared 3D space and multiple-input multiple-output pipes would be arranged as filesystem directories, automatically named pipes, triple buffers, etc, by the 'MetaEngine' module of the script. Later, ad-hoc Inter-Process Communication (IPC) would emulate the 'shared pair of wires' more typical of a hardware serial bus by both triple buffer and resetting pipes. All of this would also apply what few OS (both x64 and RasPi) customizations were still desired - copying these portable installations into bootable disk images and hooking developer functions into '.bashrc ' through ChRoot.

At least three years of shell scripting, >20k SLOC, and field testing, 'ubiquitous_bash' has acheived all objectives.

This document itself is self-modifying interleaved shell code from 'ubiquitous_bash' and markup.

scriptedIllustrator

Documentation generation as self-modifying file of interleaved shell code from 'ubiquitous_bash' and markup (using block comments of each language). Multiple simultaneous self-modifying output formats (HTML, MediaWiki, Markdown) and PDF conversion.

This document itself is created by 'scriptedIllustrator'.

BOM_designer

Hierarchical all-purpose Bill-of-Materials (aka. BOM) generator. Specifically intended to tally components from complex assemblies of other complex assemblies.

gEDA_designer

Generates, manufacturing (ie. gerber, centroid), distributor (eg. Mouser CSV), CAD (eg. SVG, DXF), model (eg. PDF, PNG), photomask (eg. PDF), files. Includes template and vector tests. May use similarly contained custom patched 'pcb2gcode' and/or 'pcb' as necessary for photomask, CNC drill/routing path, and autorouting compatibility.

arduinoUbiquitous

Arduino build environments, projects, configuration, self-contained relative to 'ino' file instead of user directories.

Project and library file absolute locations always appear at same location (eg. '/dev/shm/...') set by an automatically generated 'project.afs' file (ie. 'ubiquitous_bash' 'abstractfs'). Working ARM hardware debugging services included with randomized network port connection to 'gdb', 'ddd', etc. Robust serial port and hardware port communication interaction and upload. Extensible by imported shell script neighboring 'ino' file (eg. to implement firmware-specific serial port identification). Certified well-tested versions noted in README file. Among other features.

PatchRap

Modular and standardized machine wiring, power distribution. One wire from 3D printer 'motherboard' per limit switch cable, instead of three.

Instant 'PatchPanel' combining a breadboards with a generic PCB. Adapts logic, sensors, actuators, and data networks to inexpensive, highly shielded long haul Ethernet/Telephone cable. Carefully provisioned for a vast diversity of applications, including vehicles, industrial automation, and datacenter monitoring. CNC and stepper motor driving use cases have been specifically documented. Innumerable configuration options are thoroughly supported. Printable color coded labels are available for maximum safety in high-power and high-reliability systems. Product of Soaring Industries LLC.

https://github.com/mirage335/PatchRap/blob/master/PatchRap.pdf

LiveUSB/LiveCD

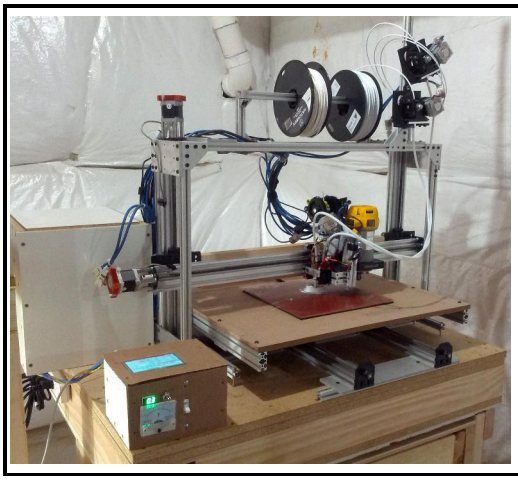
Built by 'ubiquitous_bash'. Hibernation Snapshot, SaveState (VM features on any virtualization backend or physical computer hardware). Bootable disk images from same build also will be used as development computer (x64), end-user computer (x64), cloud services (x64) for thin-client, and embedded (RasPi) OS distribution.

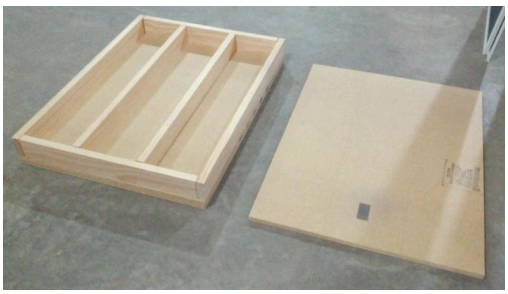
TazIntermediate

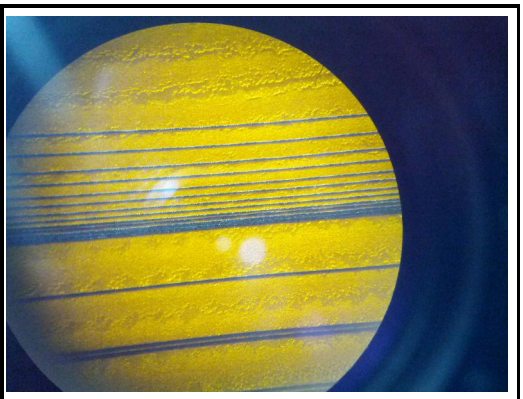
Field test of tool usability, from electromechanical design, to the point of cabling diagramming and assembly rehearsal in VR. Only the VR part not yet 100% FLOSS, otherwise portable to any Linux (eg. VM) machine.

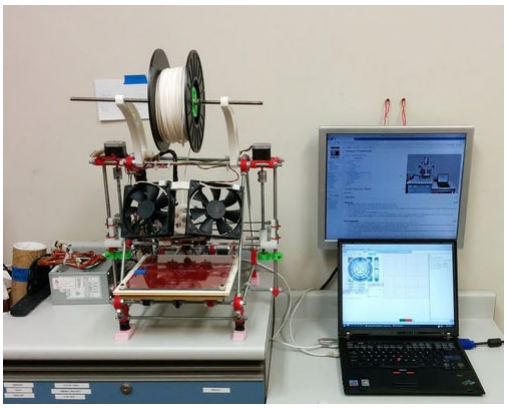
Projects

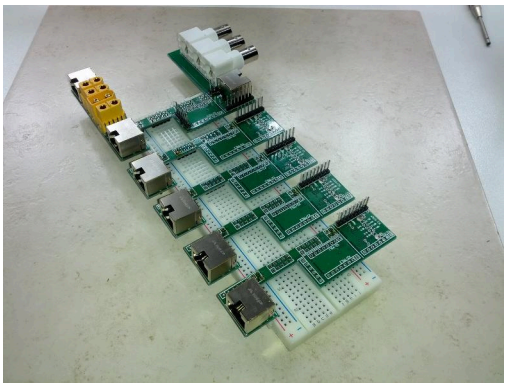
Assortment of side projects. Some continue as substantially important resources, others as expended resources having fulfilled a useful purpose and exemplified principles for future work.

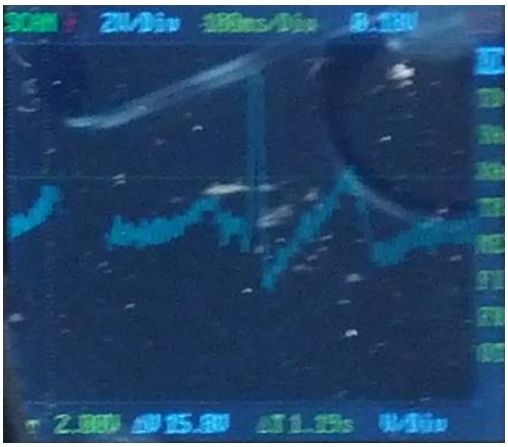


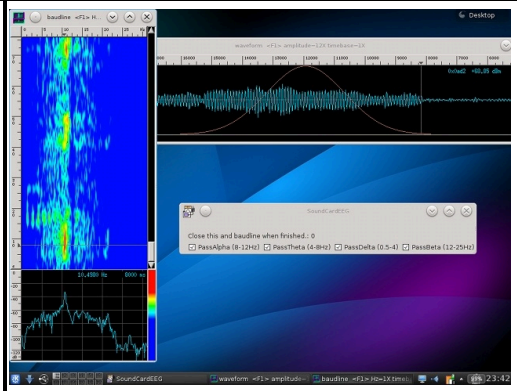


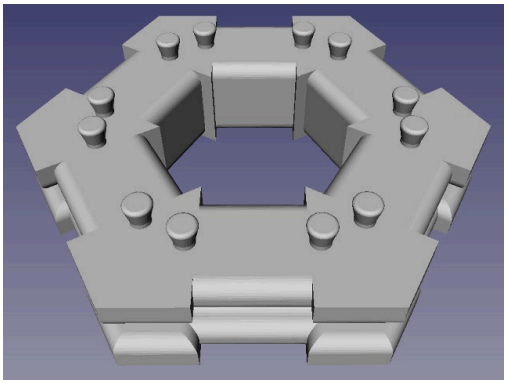


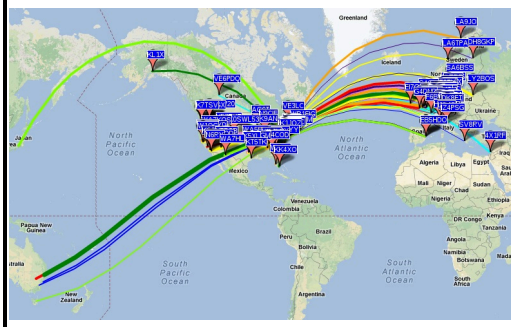


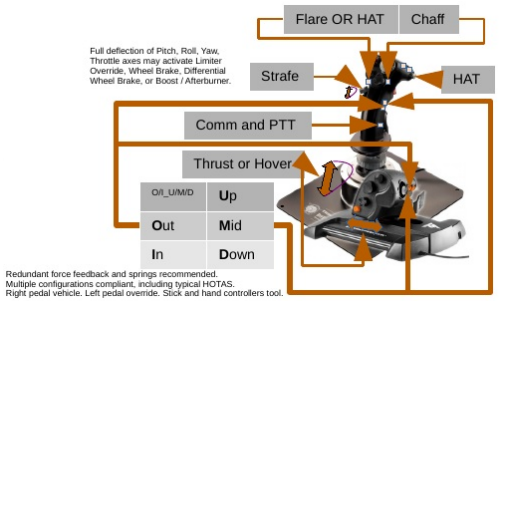


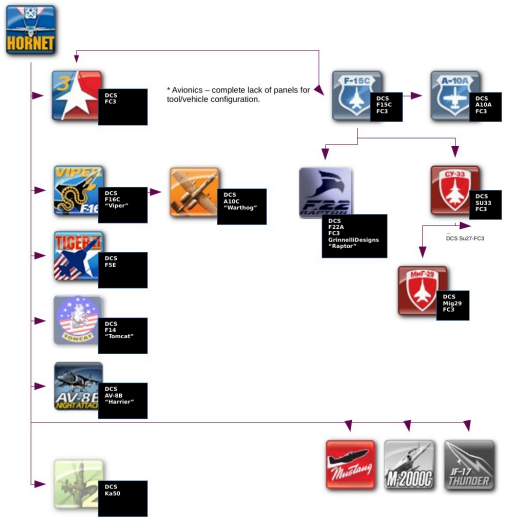


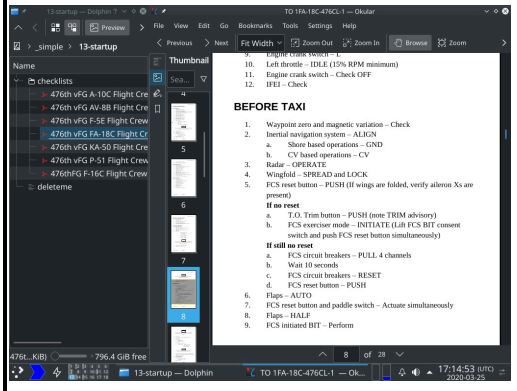


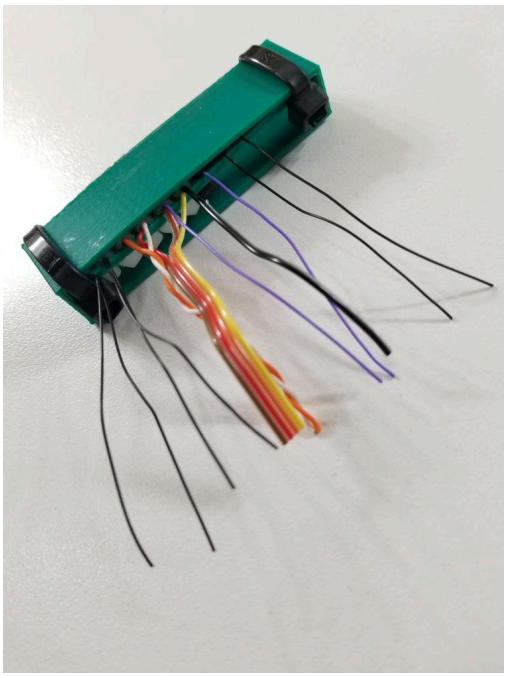


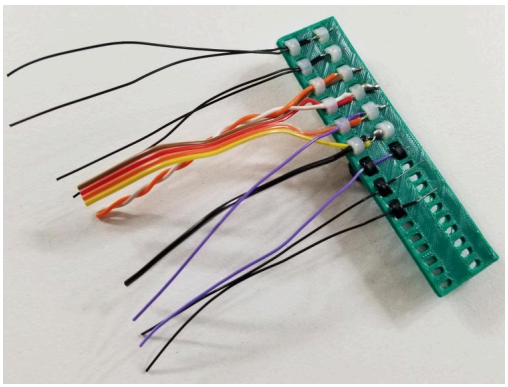


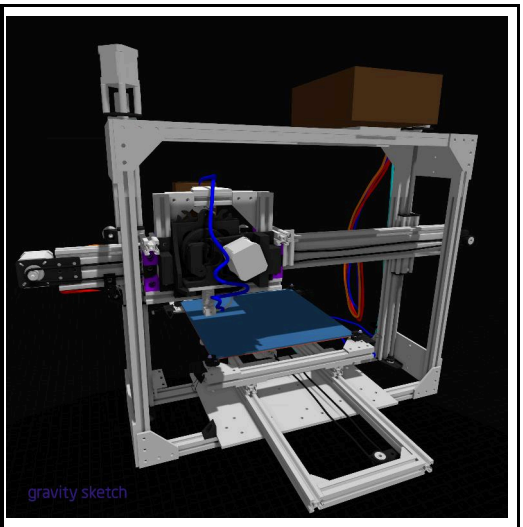

Flare OR HAT
Chaff
Full deflection of Pitch, Roll, Yaw, Throttle axes may activate Limiter Override, Wheel Brake, Differential Wheel Brake, or Boost / Afterburner.
Strafe
HAT
Comm and PTT
Thrust or Hover
O/I_U/M/D
Up
Out
Mid
In
Down
Redundant force feedback and springs recommended.
Multiple configurations compliant, including typical HOTAS.
Right pedal vehicle. Left pedal override. Stick and hand controllers tool.

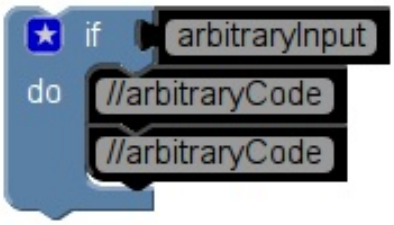

HORNET
* Avionics – complete lack of panels for tool/vehicle configuration.
DCS F-15C
DCS A-10A
DCS F16C "Viper"
DCS A10C "Warthog"
DCS F22A FC3 GrinnellDesigns "Raptor"
DCS SU27-FC3
DCS F5E
DCS F14 "Tomcat"
DCS AV-8B "Harrier"
DCS Mig29 FC3
DCS Ka50
Mustang
M-2000C
F-17 THUNDER


BEFORE TAXI
1. Waypoint zero and magnetic variation – Check
2. Inertial navigation system – ALIGN
a. Shore based operations – GND
b. CV based operations – CV
3. Radar – OPERATE
4. Wingfold – SPREAD and LOCK
5. FCS reset button – PUSH (If wings are folded, verify aileron Xs are present)
If no reset
a. T.O. Trim button – PUSH (note TRIM advisory)
b. FCS exercise mode – INITIATE (Lift FCS BIT consent switch and push FCS reset button simultaneously)
If still no reset
a. FCS circuit breakers – PULL 4 channels
b. Wait 10 seconds
c. FCS circuit breakers – RESET
d. FCS reset button – PUSH
6. Flaps – AUTO
7. FCS reset button and paddle switch – Actuate simultaneously
8. Flaps – HALF
9. FCS initiated BIT – Perform
10. Left throttle – IDLE (15% RPM minimum)
11. Engine crank switch – Check OFF
12. IFEI – Check

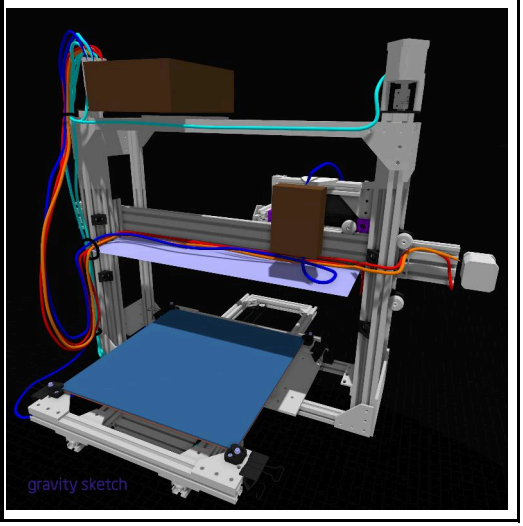









```
if (arbitraryInput) {
  //arbitraryCode
  //arbitraryCode
}
```



Industrial Computerized Numerical Control (CNC) Platforms

Designing, building, and operating a growing base of industrial Computerized Numerical Control (CNC) platforms.

TazMega and TazStiff are fully self-designed, built, and operated. TazUp simplifies the upgrade process for existing stock LulzBot Taz machines to a three-step process emphasizing the benefits of metal plates instead of plastic brackets.

Accessories applicable to virtually all CNC platforms have become available to the public through these projects. Most notably, RigidTable provides the strong base to resist stress that would deform less robust machines, and heavy tools simultaneously combining 3D printing extruders, milling spindles, and various lasers have been demonstrated.

https://github.com/mirage335/Taz_Mega
https://github.com/mirage335/TazMega-SDCard
https://github.com/mirage335/TazMega-Softload
https://github.com/mirage335/TazStiff
https://github.com/mirage335/TazStiff/blob/master/TazUpHowTo.pdf
https://github.com/mirage335/TazIntermediate

https://github.com/mirage335/RigidTable
https://github.com/mirage335/TazStiff/blob/master/Table/Table.fcstd

PrusaMendel

Collaboratively, have upgraded rigidity, lifespan, and usability for HacDC's Prusa Mendel 3D Printer. Responsible for more than half the printer's parts, through upgrades over a three year period, as well as for the printer remaining operational. Maintenance has included documentation, extruder fabrication, CNC milling stronger parts, spool holder fabrication, complete print-surface re-engineering, and eliminating manual priming from the printing process. Special thanks to Julia Longtin for timely parts and debugging assistance, and mentorship.

Since then the platform has manufactured the models crucial to Julia Longtin's CCC31 presentation on lost-PLA aluminum casting by consumer microwave oven heating. Consequently, the overall effort has been directly responsible for HacDC freely acquiring an outstanding LulzBot Mini. High-maintenance requirements of the PrusaMendel continued to provide a highly educational robotics 'school' as well after that.

Personally, the PrusaMendel was a very important introduction to 3D printing and much needed experience solving mechanical issues and quantifying the need for machine rigidity.

https://www.youtube.com/watch?v=JsSndSXFl8M
https://wiki.hacdc.org/index.php/Category:PrusaMendel

http://www.hacdc.org/2015/03/10/hacdc-wins-lulzbot-mini-3d-printer-hackerspace-giveaway/

Biosignal Amplifier

Animals (including humans) produce weak electrical signals, as hearts beat, muscles move, and neurons fire. Using all the best techniques and components, a uniquely low-noise high-dynamic-range biosignal amplifier has been achieved to pull out even the weakest biosignals for research purposes. Mirage335BiosignalAmp employs new research on low-noise amplifier chips and extensive measures to reject external noise such as feedback AC coupling, driven shields, and active probes. An ArduinoDAQ, 24bit ADC, is also onboard, paired with high-order digital IIR filters efficient enough to run in real-time on AVR (ie. Arduino) microcontrollers before handing off the raw audio format data through USB connection.

Complete schematics, PCBs, BOMs, documentation, repositories, and investor list, have been published.
Special thanks to Shawn Nock for creating oshpark conversion script, having inspired 'GEDAProduction' and later 'gEDA_designer', generating a variety of PCB related fabrication assets (eg. CAD models, gerber files, BOM, PDF photomasks).

https://wiki.hacdc.org/index.php/Category:BiosignalAmplifier

TestCart

Built up HacDC's test equipment cart to handle almost any electronics design problem, through self-built hardware, salvaged components, recommended purchases, and efficient cart layout. Among other things, capabilities were broad enough to construct superheterodyne HF receivers in a few minutes just by connecting equipment with BNC cables. After serving many useful purposes for a long time, unfortunately was disassembled due to temporary disuse and pressing need for floor space. Until then, this was most likely the most complete publicly available electronics test facility at or near the US East Coast.

https://wiki.hacdc.org/index.php/Category:TestCart

30MHz_LowPass

Air-core toroid, extremely high performance DC-HF preselection filter for extremely high dynamic range upconverting superheterodyne radios. Functional, tested, and using robust 3D printed electrical components of own manufacture.

Antenna

As a HacDC project, provided worldwide HF (shortwave) amateur radio communication, having served as the club's primary antenna for at least three years. This replaced an antenna remote amateur radio operator receivers confirmed as inoperable for transmission. Testing a variety of antennas in a rural open field demonstrated a 20m quarter-wave (5m height) vertical monopole antenna was most suitable. With an SGC-237 autotuner, all-band coverage from 1.8MHz to 29.7MHz has been available, meeting the requirements for automatic link establishment.

http://en.wikipedia.org/wiki/Automatic_link_establishment
https://www.hacdc.org/2012/08/17/new-amateur-radio-antenna/

AudioToResistance

Collaboratively worked with Project Byzantium development team at HacDC to trigger Push-To-Talk radio inputs using only energy received from audio line-level signals. Enables high-speed data transmission across VHF/UHF amateur radio technology, requiring only low-cost 'handie talkies' as transceivers. Assistance provided included several schematic designs and CNC milled PCBs in one night.

http://project-byzantium.org/
https://github.com/HacDC/AudioToResistance/blob/master/Basic.sch.png

Web Services

Hosted at HacDC, using servers Shimmer, Starlight, and Nebula. Personally setup and shared with the community. After serving useful purposes, especially VPS hosting for HacDC members, unfortunately defunct due to eroding physical hosting space and ISP changes. Reuse, donation to another hackerspace, or salvage, are all possible, as the components remain relevant, valuable, and especially reliable (notably having been manufacturered near the end of server exemption from RoHS).

http://hacdc.org/
https://wiki.hacdc.org/index.php/Shimmer
https://wiki.hacdc.org/index.php/Starlight
https://wiki.hacdc.org/index.php/Nebula

Flight Sim

Proficient (at least when not out of practice) in DCS World with FA18C and other simulated aircraft including F16C, to the point of complete startup procedures, avionics use, night carrier landings, formation flying, approach plates, etc. Partly used to perfect the 'commonControlScheme' single-stick compatible HOTAS specification, and alternative voice commands, carefully provisioned for mapping of all controls to buttons and axes for a much wider variety of tools and vehicles .

BusinessCard

Custom graphics. Only the satellite, antenna, clouds, stars, are clipart from OpenClipArt or Inkscape. All other work is an original design. Actual cards are color laser printed as seamless 12 card panels, then depanelized by HacDC's 40W CO2 laser cutter (and later Makersmiths's CO2 laser cutter).

Formal Qualifications

Self Taught, Aggressively

Amateur Radio Licensed, Extra Class, earned in one sitting. Callsign AB3PI.

CompTIA Linux+ Certified
	http://en.wikipedia.org/wiki/CompTIA#Linux.2B
	Issued Sep 2010
	No Expiration Date
	Credential ID P1B2BE5DBK1EYJZH

Hurricane Electric IPv6 Certification
	https://ipv6.he.net/certification/create_badge.php?pass_name=m335foundation&badge=3
	Name: mirage335foundation
	Level: Sage
	Current Score: 1005

Black Belt, First Degree

UMUC
	GPA 4.0, Summa Cum Laude
	Bachelor's of Science (Psychology) Degree
	Computer Science Minor

POLICY

Copyleft

Default - Public Doman
Resources without an explicit license declaration are automatically in the public domain.

Small - Public Domain
Small projects and libraries will be explicitly given an all permissive license to maximize adoption (eg. 'scriptedIllustrator').

Large - GPLv3
Large projects will be given GPLv3, *NOT* GPLv2.

Specialized - AGPLv3
AGPLv3 license may be imposed until sufficiently reassuring contributing and actively community engaging behavior is seen, if there are specific unusual risks of open-source code becoming unusable.

*) History (eg. Arduino) of overcommercialization and portability/compatibility neglect causing especially delayed and painful interoperability effort (eg. 'arduinoUbiquitous' firmware library, gdb debugging, etc, containment).
*) Unusual likelihood of entire project maintained behind software-as-a-service (eg. 'scriptedIllustrator' tinyCompiler)
*) Already predominant absence of availability of any similar essential resource except behind software-as-a-service (eg. 'BOM_designer').
*) Possibility for quoting out of context (eg. 'universalTechnologySpecificationTextbook') .
*) Unusual incentive to neglectfully substitute multiplatform host virtualization compatibility for cloud (eg. 'universalTechnologySpecificationTextbook' due to 'scriptedIllustrator').
*) Expected abandonment of interoperability and portability/compatibility except through predominant 'app store' and 'thin client'.

Nevertheless author 'mirage335' respects the reservations of such organizations as 'Google' regarding the virality of AGPLv3, and is willing to make reasonable accommodations. Normally the AGPLv3 license is only narrowly applied to code with no plausible end user or network service function (eg. 'arduinoUbiquitous' firmware compiler, 'scriptedIllustrator' tinyCompiler bootstrapping, 'BOM_designer' extremely specialized for CAD assembly, 'universalTechnologySpecificationTextbook' for developers, mostly only for the author, and only a static document for non-developers).
https://opensource.google/docs/using/agpl-policy/

Specialized - Wiki
For compatibility with Wikipedia, in addition to any other (ie. public domain or AGPLv3 compatible) license, Wiki pages at any site may benefit from the Creative Commons Attribution Share Alike license.

DISCOURAGED - GPLv2
GPLv2 is questionable, as accidental violation of the GPLv2 can cause massive problems for large projects, and usual text for GPLv2 may not include provisions to allow relicensing by any 'later version'. Case in point: it would be "technically quite hard" (Linus Torvalds) to dual license the Linux kernel.
http://www.gnu.org/licenses/quick-guide-gplv3.html

Authentication

Authentication without encryption is reasonable in some situations by limiting transaction rates, by physical location/direction,

and by revocation of multiple logins. By contrast, relying on encrypted logins by HTTPS/SSL, has a history of severe weaknesses, plaintext emissions, timing analysis, side-channel analysis, and official amateur radio incompatibility.

Plain HTTP may be used whenever possible. At all times (even as part of encrypted login web pages), some filetypes (particularly images) may remain unencrypted (eg. if served by CoralCDN).

RoHS

RoHS ban of leaded solder is of negligible benefit and substantial harm whereas a tax may have been more reasonable. Little change in environmental lead from bulk uses could reasonably be expected, and unintended consequences are severe.

*) Insufficient assurance third-party (especially small business) PCB assembly services have followed the many precautions to minimize tin whisker failures.
*) Non-availability of computer CPU/GPU/RAM/motherboard tolerant of long-term ambient cooling by liquid nitrogen, liquid helium, etc, due to tin pest.
*) Drastically worse risks during chip replacements by hot-air removal and reflow.
*) Drastically worse risk of damaging 3D printer control circuitry due to >1year backordered chip shortage.
*) Unnecessary disruption due to avoidable failure of older servers.
*) Possible loss of the dwindling supply of the most reliable data storage devices ever created - magneto-optical drives.
*) Data loss unpreventable due simultaneous tin whisker bridging failures including unintended simultaneous overwriting of multiple RAID arrays.

For the future, all industries must be wary of provoking such a ban instead of a more reasonable tax, as a consequence of any perceived irresponsibility on their part.

Copyright

AGPLv3
Unusual exception for specific complete binary files as described by license notice.

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along with this program; if not, write to the Free Software Foundation,
Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

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Any HTML file used as a website must similarly distribute the associated source files - usually at 'https://github.com/mirage335/mirage335_author' or similar . Due to calls to 'cat' other files, and other structures, the HTML file itself, even if self-modifying, may NOT qualify as 'the preferred form of the work for making modifications to it' and may NOT qualify as 'source code'.

errata

Communication-errata

GPG Public Key (Generic, spamfreemirage335@gmail.com)

```
-----BEGIN PGP PUBLIC KEY BLOCK-----
Version: GnuPG v2.0.18 (GNU/Linux)

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D4f+yaFh7YcipumXEG7MAblya5g=
=9uQj
-----END PGP PUBLIC KEY BLOCK-----
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Direction-errata

As a thought experiment, we should consider what may happen if some of our memories suddenly awoke in the life of another. We would think ourselves still very much the same person. Likewise, if a part of our brains were electrically connected, as parts of our brains are already connected internally, to others, we would perceive their transferred senses and thoughts as our own.

Our immediate perception of our selfish interests, is both a reality with which we experience life as problem solving from a single embodiment bound by single-threading and speed of light, as well as quite possibly also mere illusion.

Nothing about the universe guarantees the apparent fluctuations in fields we observe as electrons or photons bouncing in and out of our also replaced atoms in fact have any identify. During the infinitesimal times as photons exchange with our surroundings, as electric current passes in and out of us, as neutrinos go through us, or from a conscious moment of three seconds to the next, much less from one sleep to the next, and especially not from one universe through chaos to a possible next universe - there is no guarantee that our experience of life is not also a part of all else.

Do unto others as you would have them do unto you. Including allowing them to make choices as a part of the experience of life.

Because there is a risk they might actually be a part of you.

Meanwhile, the universe from which no guaranteed escape is possible ends in chaos. We cannot prevent all unpleasantness, only choose to live by solving the challenging problems of life while we can still make that choice.

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Winners at the game of life bring the fullest diversity and quality to more players.

Project success is happiness (ie. diversity and quality of life). Production is resources multiplied by their expiration (ie. resources * time). Effort is work people do not want to do (ie. person hours).

Derision of a less inflated learning curve is highly inappropriate, minimizing the learning curve, highly appropriate.

Capitalism, wealth, economic bottlenecks, traditional 1% elite, and delayed gratification by decades, are at best expedient, at worst, unnecessary evil.

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Seeking to develop open-source heavy industry underpinning a sustainable closed-loop economy.
Requirements are sought, maximum performance solutions identified, infrastructure built.

Veni, vidi, vici.

DISREGARD - All of those old goals as it turns out were intermediate steps, some now completed by others.
Requirements have been identified, maximum performance solutions have been designed, infrastructure has been built. Heavy industry has been found to have reached its limits. Not really anywhere to go, anything to see, or accomplish, no veni, no vidi, no vici, now only routine development.

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Individuals or organizations with skills, tools, connections, or a desire to learn are invited to participate.

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DiversityEquityInclusivenessDEI-errata

For diversity, equity, and inclusiveness, I have never found any credible evidence suggesting populations of people are significantly, much less substantially, different in their capacity for enthusiastic problem solving, and I have always viewed participation demographic differences (most blatantly underrepresentation of females in some multiplayer video games) as conclusive evidence of inappropriate social pressures that must be reversed. Under the diligent scrutiny that has long been applied, I find this absence of credible evidence extremely strong scientific evidence that no such differences exist. Moreover, scientific skepticism is about erring on the best side of caution. Many problem solvers have availed the rare opportunity to learn exceptional determination from solving a problem of their own, and their well educated intuition would be sorely missed both by their peers who need help discovering their own mistakes and by all who in any capacity support the effort to solve problems. Each such person is an irreplaceable investment in the future both by theirself and by the whole, each such person excluded, an irreversible setback.

To date, I have also worked with people of diverse backgrounds without reservation, and served on the Board of Directors of a 501(c)3 non-profit (ie. 'HacDC') with a mission of publicly available education and research.

Empowerment-errata

Thus far, my efforts have been focused on ensuring more equal empowerment of *ALL* persons by FLOSS toolchains, open sharing of research (eg. 'universalTechnologySpecificationTextbook'), and limited use of the currently proprietary VR software (ie. 'SteamVR', 'GravitySketch'). Increasingly, I have commoditized modern hardware and software design toolchains, to the point that a single person, from a single computer, with only typically available resources, can properly plan an entire project from hardware design, through firmware and software design, to VR wiring and assembly rehearsal, as demonstrated by 'TazIntermediate' and 'arduinoUbiquitous' projects, which were field tests of sorts that took approximately one year to prepare for.

Pen and paper are not sufficient, nor are smartphones and pocket calculators. Everyone deserves the opportunity to know of the science to cure their disease, compile native software (eg. bash, CMake, Raspberry Pi, Linux, MSW), to transfer analog data into computers (eg. /dev/ttyUSB , 'arduinoUbiquitous' , USB3 FPGA), to CAD model sketch/part/assembly (eg. FreeCAD A2Plus, Autodesk), to simulate physics (eg. COMSOL, ANSYS), to process signals (eg. GNU Radio, GNU Octave, Qalculate, LabView, MatLab), to draw wring in 3D, to rehearse assembly VR. No one should ever have to neglect or especially never learn to plan their projects properly simply because of 'pay-to-sit', or because the trade secret code cannot be integrated with other code. No one should be weeks to years of software installation, scripting, or training, away from such planning resources 'out-of-the-box'. Such are not even the trappings of encouraging innovation, these issues have unreasonably persisted.

*) BOM_designer
*) gEDA_designer
 *) Modified 'pcb' with autorouting compatibility.
*) arduinoUbiquitous
*) ubiquitous_bash

*) FreeCAD with A2Plus

*) universalTechnologySpecificationTextbook

POLICY_PROMOTION_antiharassment

Harassment is well defined, and well-written anti-harassment policies (minimizing vagueness) exist. Explicit anti-harassment policies are an effective way for a community to make clear their constructive nature, wide tolerance for potential newcomers, and agreeableness with good neighbors.

People act less on motivations under harassment, and harassment is itself not a positive experience. Consenting to a context which includes competing interests or occasional hazards in multiplayer gaming only presents problems, which from inside that context (ie. not cheating), are solved therein, not tolerated. Harassment tolerated from inside or between any context, (eg. bigotries referencing a person's 'in real life' possible attributes, harms 'in real life', etc) is without any exception whatsoever a harmful issue.

Harassment between persons 'in real life' by definition cannot be inside any other context (ie. is not 'roleplay'), and since harassment is demotivating, there is no justification to tolerate harassment.

Thus, without excluding roleplay or any other excuse, well-written anti-harassment policies are reasonably fully enforceable as is.

Discovering such severe discouragement as harassment is difficult enough, tolerating such discouragement has no rational excuse.

Examples
*) Not Tolerable - Much that could be described as discriminatory, offensive, unwelcome, inciting, intimidating, disruptive, etc, more thoroughly defined with less vagueness by longer anti-harassment policies.

*) Not Tolerable - Posting 'NSFW' borderline explicit images, discussion, etc, in places not expected or avoidable (eg. not hiding behind a 'NSFW' warning page).
*) Not Tolerable - Repeated extensive off-topic discussions in channel (eg. personal arguments over relationship issues and who was correct).

*) Not Tolerable - A moderator privileged from outside a multiplayer game, tolerating players who have been repeatedly sending harassing messages to other players 'in real life', in other communications channels, or regarding subjects which are not part of the game (eg. a player's 'IRL' gender identity).

*) Possibly Tolerable - A moderator privileged from outside a multiplayer game, may allow, if part of the game, players inside the game to critique a player's historic or current affiliation with another player corporation's territory.
*) Not Expected - Majority of players continuing to employ moderators who use their privileges from outside a multiplayer game to remove players solely for disagreements happening otherwise entirely inside the context of a multiplayer game.
*) Not Expected - Majority of players inside a multiplayer game not acting against (ie. tolerating) other players unprovoked assailment.

'The other guy, he never flinched no matter how bad things got.' -from memory of Sword Art Online, said of the dispassionate role within Aincrad of its game master

Reference
https://en.wikipedia.org/wiki/Harassment
	'of an offensive nature'
	'evolve from discriminatory grounds, and have an effect of nullifying a person's rights or impairing a person from benefiting from their rights'
	'continuity or repetitiveness and the aspect of distressing, alarming or threatening may distinguish it from insult'

https://geekfeminism.fandom.com/wiki/Community_anti-harassment/Policy
 'This policy is licensed under the Creative Commons Zero license . It is public domain, no credit and no open licencing of your version is required.
  If you would like to optionally attribute it, you could use the below text and link to http://geekfeminism.wikia.com/wiki/Community_anti-harassment:
    This anti-harassment policy is based on the example policy from the Geek Feminism wiki, created by the Geek Feminism community.
  The policy is based on the conference anti-harassment policy, and is the work of Annalee Flower Horne with assistance from Valerie Aurora, Alex Skud Bayley, Tim Chevalier, and Mary Gardiner. '
	'example community anti-harassment policy, particularly designed for use in communities that are primarily online'

https://geekfeminism.fandom.com/wiki/Conference_anti-harassment/Policy
 'Community content is available under CC-BY-SA unless otherwise noted.'
	'originally written for mainstream technical conferences'
	'Presentations or similar events should not be stopped for one-time gaffes or minor problems, although a member of conference staff should speak to the presenter afterward. However, staff should take immediate action to politely and calmly stop any presentation or event that repeatedly or seriously violates the anti-harassment policy. For example, simply say "I'm sorry, this presentation cannot be continued at the present time" with no further explanation.'

https://geekfeminism.fandom.com/wiki/Conference_anti-harassment/Example_exception_to_policy
 'Community content is available under CC-BY-SA unless otherwise noted.'
	'attendees are warned in advance in the program and respectfully given ample warning and opportunity to leave beforehand'

POLICY_COMPLIANCE_allPurpose

At any publication, announcement, or new service, or at any thoroughly extensive maintenance or replacement, best usual (eg. commercial) practices will be, has been, and are reasonably anticipated and followed. Official national firm public policy and foreign policy will be, has been, and is promoted and upheld in the interests of serving a public purpose including reducing governmental costs and burdens as would be most recognizable to IRS definitions.

Where perception reasonably may exist that the motivation is personal gain or acquisition rather than creation of wealth, all reasonable opportunities will be used for transparency and abundance of caution.

Reference
https://www.irs.gov/pub/irs-tege/eotopicl94.pdf
'The Supreme Court has said:
...[I]t would be anomalous for the Executive, Legislative and Judicial Branches to reach conclusions that add up to a firm public policy ..., and at the same time have the IRS blissfully ignore what all three branches of the Federal Government had declared.
Bob Jones University v. United States, 461 U.S. 574 (1983) at 598'
'activities that are inconsistent with public policy obviously increase, rather than reduce, governmental costs and burdens, and are inconsistent with the basic requirement that exempt organizations serve a public purpose'

https://www.irs.gov/charities-non-profits/charitable-purposes
'The exempt purposes set forth in Internal Revenue Code section 501(c)(3) are charitable, religious, educational, scientific, literary, testing for public safety, fostering national or international amateur sports competition, and the prevention of cruelty to children or animals. The term charitable is used in its generally accepted legal sense and includes relief of the poor, the distressed, or the underprivileged; advancement of religion; advancement of education or science; erection or maintenance of public buildings, monuments, or works; lessening the burdens of government; lessening neighborhood tensions; eliminating prejudice and discrimination; defending human and civil rights secured by law; and combating community deterioration and juvenile delinquency'
'prevention of cruelty to children or animals'
'lessening the burdens of government'
'defending human and civil rights secured by law'

POLICY_AVOIDANCE_politics

Prefer a balanced view rather than divisive politics. Aside from distinct ethical issues (including anti-harassment), which among other possible criteria, are least ambiguous, least legitimately controversial, least political, and least geopolitical, I have no particular interest in Democrats vs Republicans, Unions vs No Unions, monetary policy, or irrational voting issues. If anything, I would prefer to see all sides of US politics trend towards mildness, investment, and economics.

My primary political concern will be, has been, and is expedient developer access to use and share with the world the full benefits of self-driving AI, Virtual Reality, neural interfaces, etc.

I find it particularly inappropriate that US politicians emphasize categorical action without regard to ongoing goals, seemingly welcoming the likes of Bill Gates, while openly obstructing Elon Musk (specifically funding other EV manufacturers, and ignoring the commoditization efforts of SpaceX/Starlink/Neuralink in calling for a wealth tax).

I was hopeful for Bernie Sanders as a public leader, and personally handed him a 3D printed model of the Capital, at St. Stevens Church, printed that same day in the same building at HacDC (the non-profit workshop open to all). He can do better than to make no consideration of Elon Musk, and especially to insinuate that reaching towards space, Mars, neural interfaces, etc, does not directly benefit the survival options for people living on Earth today.

Rejecting expert consensus - weakening the security/encryption of commercially available products (eg. smartphones, personal computers, operating systems), is also not the act of legitimate civil servants, placing the ease of doing their jobs over good governance, safety, and national security, diminishing the credit they would otherwise deserve for voluntarily serving the public sector.

Reference
https://en.wikipedia.org/wiki/Starlink
'Deployed satellites' 'working, 10 January 2022' '1,552' https://planet4589.org/space/stats/star/starstats.html
'Committed completion date' 'Half' 'March 2024' 'Full' 'November 2027'

https://www.cnbc.com/2021/11/01/amazons-project-kuiper-launching-first-internet-satellites-in-q4-2022.html
'Amazon plans to launch its first internet satellites in late 2022'

https://en.wikipedia.org/wiki/Kuiper_Systems
'up to a decade to fully deploy all 3,236 satellites planned for the full constellation in order to provide internet to "tens of millions of people who lack basic access to broadband internet"'

https://en.wikipedia.org/wiki/Embrace,_extend,_and_extinguish
https://en.wikipedia.org/wiki/Copyright
'original length of copyright in the United States was 14 years'

https://en.wikipedia.org/wiki/Bill_Gates#Antitrust_litigation
	'His views on the value of legal monopolies in medicine have been linked to his views on legal monopolies in software.[148][149]'
	 'https://www.wired.com/story/opinion-the-world-loses-under-bill-gates-vaccine-colonialism/'

https://finance.yahoo.com/news/elon-musk-bernie-sanders-am-162755727.html
	'"We are in a moment in American history where two guys â€” Elon Musk and Jeff Bezos â€” own more wealth than the bottom 40% of people in this country. That level of greed and inequality is not only immoral. It is unsustainable."'
	'"I am accumulating resources to help make life multiplanetary & extend the light of consciousness to the stars."'

https://en.wikipedia.org/wiki/Theodore_Roosevelt#Trust_busting_and_regulation
	'prosecute the "bad trusts" that restrained trade and charged unfair prices'

POLICY_amateurRadio-errata

Prohibiting all encryption, limiting baud rates, and limiting bandwidth, with Amateur Radio or similar use of <30MHz radio spectrum is unreasonably silly for several reasons, including the possibility of daily authentication with the limited spectrum otherwise available, and significant thermal noise present in all radio transmitters/receivers indistinguishable from pure ciphertext transmissions. Absence of HF allocations to Part15 use is at this point extremely silly. But satellite services commonly exist now anyway, so who needs amateur radio.

POLICY_PROMOTION_vaccination

Vaccines to date (2022), using materials with worst-case lifelong effects not worse than disease, have on the whole lowered the risk of, not caused, any kind of specific damage (eg. loss of limb, loss of smell, etc) in addition to the also widely emphasized beneficial reduction of economic disruption, measured disability rates, and deaths. Personal choice is improved, rather than reduced, as the behaviors and experiences (eg. socializing, enjoying a meal, etc) are not in any way, specific or not, harmed more than would be by the disease. Herd immunity is to avoid, not to defer the societal cost of, inevitable disease unpleasantness, as a strictly rational campaign for real success from a basis of firmly established widespread scientific consensus against specific diseases. In the absence of known vaccine allergy, vaccination is of great individual benefit. In the presence of known vaccine allergy, such an individual may have little choice but to hope a combination of their own quarantine and herd immunity from others will save their personal choice, limb, and life.

Due diligence - understanding what vaccines and pathogens both are composed of, identifying the biases and conduct of individual scientists, observing whether there is firmly established widespread scientific consensus - may be an effort many persons would prefer to delegate. Unambiguous strong evidence and/or credibility are necessary to persuade changing course when seemingly healthy enough, and herd immunity may require very high immunity rates (eg. >95%).

Rational humanitarian and economic policy may depend on redemonstrating credibility by delineating what supposed medical necessities will actually be known to history as actually respectful of personal choice and representative of scientific consensus, while more readily acknowledging those that will otherwise erode credibility. Significant political pressure or lifelong effects for supposed benefit of parts per thousands in population numbers or public costs are not credible.

Highest possible quality and most necessary medical care, from firmly established widespread scientific consensus, will be, has been, and is promoted.

Reference
https://en.wikipedia.org/wiki/Vaccine
	'Immunogen'
		'nanograms of virus particles, or micrograms of bacterial polysaccharides'
	'Adjuvants'
	'Preservatives'
	'Excipients'

	'Building trust and acceptance of a licensed vaccine among the public is a task of communication by governments and healthcare personnel to ensure a vaccination campaign proceeds smoothly, saves lives, and enables economic recovery.[87][88]'

	'whole-organism vaccines'
	'subunit vaccines'
	'RNA vaccines and DNA vaccines'

https://en.wikipedia.org/wiki/COVID-19_pandemic_in_the_United_States

https://en.wikipedia.org/wiki/Charlotte_Cleverley-Bisman
	'1080 had suffered serious disabilities, such as limb amputations or brain damage'

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6122668/
	'sites were not evidence-based and argued vaccines were inherently dangerous without any merit-based argument'
	'If the waivers are given to a small number of individuals who sincerely need them rather than ones who are inconvenienced by them, waivers may be ethically and legally sound.'
	'As for the religious versus secular debate, it is difficult to ignore secular objections as most of them are rooted in spiritual or holistic personal views [6, 47].'
	'develop trust'

https://en.wikipedia.org/wiki/Vaccine_hesitancy#Autism

'myths' 'Autism' 'idea of a link between vaccines and autism has been extensively investigated and conclusively shown to be false'
'scientific consensus is that there is no relationship, causal or otherwise, between vaccines and incidence of autism, [49][141][142] and vaccine ingredients do not cause autism.[143]'

https://en.wikipedia.org/wiki/Herd_immunity
'HIT exceeding 95%.[15]'
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2988255/

https://en.wikipedia.org/wiki/Robert_W._Malone
'MD, Northwestern University
MSc, University of California, San Diego
BSc, University of California, Davis'

https://en.wikipedia.org/wiki/Agence_France-Presse
https://factcheck.afp.com/scientist-makes-inaccurate-claims-covid-19-vaccine-safety
https://perma.cc/97NK-RXFC?type=image
'Dr. Janci Chunn Lindsay' 'Toxicology Support Services, LLC' 'holds a doctorate (PhD) in Bochemistry and Molecular Biology from the University of Texas Graduate School of Biomedical Sciences, M. D. Anderson Cancer Center-Houston'
Claims PhD and ownership of an LLC.

https://en.wikipedia.org/wiki/Sinking_of_the_Titanic#Preparing_to_abandon_ship
'Many passengers and crew were reluctant to comply, either refusing to believe that there was a problem or preferring the warmth of the ship's interior to the bitterly cold night air. The passengers were not told that the ship was sinking, though a few noticed that she was listing.[75]'
'Around 00:15, the stewards began ordering the passengers to put on their lifebelts,[77] though again, many passengers took the order as a joke.[75]'

https://news.yahoo.com/danger-supreme-court-undercutting-biden-200455779.html
'On its surface this is a case about vaccine mandates, but it is also a proxy war over the heart of the administrative state. If the Court applies the major questions doctrine in this case, that precedent will be used to constrain other agencies from acting in new, unprecedented dramatic situations, forcing them to wait for explicit authorization from Congress to act; authorization that may never come. Depending on what you think of the balance of power between Congress and the Executive that could be good or bad. But, if as it appears likely, the conservative Justices will block the ETS on this or an adjacent theory, the immediate casualty of this proxy war is the publicâ€™s health. The rule is estimated to save over 6,500 lives and prevent 250,00 hospitalizations over six months, although these estimates were pre-Omicron.'

POLICY_PROMOTION_nonproliferation

With no compelling economic case (being relatively expensive as both energy production and relatively expensive as energy storage) for new fusion or fission technology, and urgent needs for both power generation and semiconductor computing, emphasis must be on existing and new near-term sustainable power and semiconductor manufacturing.

Power density of chemical liquid fueled engines is much higher due to higher materials temperature and directly exhausting inevitable waste heat - with specific impulse imperatives obviated for interplanetary travel by SpaceX Starship heavy-lift there is no practical application necessitating fusion or fission.

Biomedical, robotic space probe power, activation/spectroscopy science instruments, are niche legacy uses of fission and fission products that can continue to have a plentiful supply from existing sources until their usefulness has been exhausted.

No investment or interest in any new or related to any new fission or fusion resources or technology exists from at least December 2021 (photovoltaic stellar being cheaper from more widely useful semiconductor manufacturing, SpaceX Starship low-cost high-mass propellant launch having largely obviated fusion/fission interplanetary propulsion) through 2035 (earliest reasonably expected possible substantial Dyson swarm or efficient interstellar colonization).

Non-proliferation will be, has been, and is promoted and upheld.

Reference
https://en.wikipedia.org/wiki/Nuclear_power
'Fuel costs account for about 30 percent of the operating costs'
'new 1,100 MW plant is estimated to cost between $6 billion to $9 billion'
~$5/W

https://en.wikipedia.org/wiki/Inertial_confinement_fusion
'PACER continued to receive funding until 1975, when a 3rd party study demonstrated that the cost of electricity from PACER would be ten times the cost conventional nuclear plants.'
'F.A. Long, "Peaceful nuclear explosions", Bulletin of the Atomic Scientists, October 1976, pp. 24-25.'

https://en.wikipedia.org/wiki/File:Death_rates_from_energy_production_per_TWh_(including_solar).svg

PROMOTION_ethicsAntiboycott

Interpretation

Included ethical services as part of a product (eg. electronic components) or service (eg. academic lecture, product technical support) may be "business reasons" and "speech" having nothing to do with boycott of a country, or discrimination. Such included ethical services may be purchased by preferring part/model/distributor numbers of products then specified in a Bill-of-Materials (which may be published as part of FLOSS) known to meet such criteria (similar to preferring RoHS compliant components and associated technical support). Such ethics as part of the product or service may be demanded by other customers (eg. students).

Legal assistance establishing means of purchasing such included ethical services is appreciated.

Issues
Personally, and by any personally owned company, part/model/distributor numbers may be chosen based on ethical services being included as part of that product, and/or any employer's supplier policies (if existing) may be followed instead or as a supplement.

Ethical issues concern settled facts, not a personally held belief about a behavior, most especially the least ambiguous, least legitimately controversial, least political, and least geopolitical. Ethical issues do not discriminate against any protected groups that would be defined by any reasonable anti-harassment policy (eg. race, religion, sex, or national origin).

Ethics services may include, during the production of products and services, due diligence and abundance of caution, many non-exclusive issues, as possible.

*) Animal welfare.

*) Self-Driving AI and Virtual Reality benefits expediency and availability.

*) Developer purchase of and unfettered access to own neural interfaces.

*) Unfettered memory backups, unfettered regenerative medicine, expediency and availability.

*) Lab grown meat expediency and availability.

*) Semiconductor manufacturing throughput, resolution, prototyping, and FLOSS hardware design.

*) Basic software (eg. microcontroller firmware, hardware debugger, FPGA, CAD, EDA, BOM, 3D Printing), etc, as FLOSS, standalone, offline, and not Software-As-A-Service.
*) Operating System EULA flexibility to install/configure copies for Virtual Machines (aka. VMs), LiveUSB/LiveCD, etc.

*) Low-latency, highly-redundant, high-bandwidth, highly-commoditized, space internet service, expediency and availability.

*) Photovoltaics, wind, low-carbon existing energy.

*) Conservation (rather than exhaustion) of scarce FLOSS resources (NOT eg. vaporware, cumbersome proprietary drivers, license incompatibilities).

*) Metaverse shared 3D space interoperability, FLOSS, dedicated personal servers, and not Software-As-A-Service.

*) Middleware (eg. web browser, VR compositor) stability (eg. infrequent nags/nuisances/updates/regressions, installation of earlier versions, offline usability, investing in elegant rather than unhelpfully complex interface feature set).

*) Technical standards, conventions (eg. UNIX file system hierarchy, X11, network/IPC transparency), OS kernel (eg. Linux), etc, adherence, collaboration, and integration (ie. NOT embrace, extend, extinguish).

*) Proactive (instead of reactive) code review and correction of zero-day exploits, rather than insufficient due diligence to prevent widely exploitable vulnerabilities.
*) Technology without bundled insecure technology (eg. Spectre, Meltdown, Intel ME, AMD PSP, exploitable proprietary cellular radio DMA/RAM/CPU integration).
*) Reliability of networked computing technology for full-time full-dive VR.

*) Conflict minerals.
*) Evidence of responsible sourcing and chain of custody for supplies, additional evidence through areas that may be high-risk.

*) Accounting, etc, software, fulfillment, etc, services, usable and affordable for small business.

*) Open-Access publication of scientific literature and news essential to ongoing scrutiny, medical needs, economics, feasibility

studies, ethics, and other essential technical purposes.

*) Vulgar fantasy is not violent evil, the permanent harm of not tolerating whatever may seem vulgar fantasy, is not ethically consistent or permissible.
*) Playstyle tolerance (eg. PvE players not tolerant of large scale PvP competition, substantial absence of other than ambush of less resourced players PvP).

*) Diversity, Equity, Inclusiveness (DEI).
*) Published declarations that ethics compliance and similar declarations were encouraged from other suppliers during production of products and services, and published delcarations of non-compliant suppliers, etc.

*) High public relations risk.

*) Harassment of any kind.

Entire point of purchasing ethics services is that contrary behaviors may nevertheless be legal, although unambiguously evil. 'Embrace, Extend, Extinguish' may be legal, but severely bottlenecks participation (both economic and speech) at comparably very small advantage to the offender, and thus is very highly unethical. Animal welfare disregard can occasion severely disproportionate anguish and loss especially to some species.

DISALLOWED
Ethics services does NOT include undertaking anything in any way in contravention of USA public policy or USA foreign policy.

All trade will be in full USA legal compliance, especially 'PART 760 - RESTRICTIVE TRADE PRACTICES OR BOYCOTTS' there will of course be no discrimination on the basis of race, religion, sex, or national origin . No foreign country, no specific company, no specific individual, no group, etc, is either the reason for any supply/supplier preference, nor the object of any preference.

*) RoHS compliance (an already existing public policy) will not be discouraged although not a USA public policy. Specific exemptions may still be filed (eg. >>50 years long-term medical or data storage devices, cryogenic computing) when financial resources are sufficient. Stringent batch destructive testing, microscopic examination, large highly reputable manufacturers using the best techniques, etc, may still be required if appropriate.

*) Boycotts will NOT be undertaken due to 'agreement with the boycotting country' (nor due to any such agreement).
*) Boycotts will NOT be undertaken due to 'requirement of the boycotting country' (nor due to any such requirement).
*) Boycotts will NOT be undertaken due to 'request from or on behalf of the boycotting country' (nor due to any such request).
*) Boycotts will NOT be undertaken against or to the disadvantage of countries.

*) Disproportionate response based on discriminatory criteria (eg. country, group, race, religion, sex, national origin) is discriminatory, NOT ethical.

*) Veganism/vegetarianism, etc, not meeting 'least ambiguous' among other possible criteria, will NOT be preferred.

*) Nutrition, or similar personal choices, will NOT be preferred.

*) Greenwashing is obvious and will NOT be preferred.

*) Requests to participate in boycotts will be reported if required or if appropriate.

Reference
https://www.ecfr.gov/current/title-15/subtitle-B/chapter-VII/subchapter-C/part-760
	'15 CFR 760.2(a)(1)' 'when such refusal is pursuant to an agreement with the boycotting country, or a requirement of the boycotting country, or a request from or on behalf of the boycotting country'

https://www.steptoeinternationalcomplianceblog.com/2021/04/treasury-removes-uae-from-boycott-list-possible-implications/
	'the Treasury Department action, combined with the revocation of the UAE boycott laws via Federal-Decree Law No. 4, raises a question as to whether the requisite â€œintentâ€ to support an unsanctioned boycott would now exist'

https://www.federalregister.gov/documents/2021/04/08/2021-07244/list-of-countries-requiring-cooperation-with-an-international-boycott
	'following countries require or may require participation in, or cooperation with, an international boycott (within the meaning of section 999(b)(3) of the Internal Revenue Code of 1986)'

https://en.wikipedia.org/wiki/Harassment
	'of an offensive nature'
	'evolve from discriminatory grounds, and have an effect of nullifying a person's rights or impairing a person from

benefiting from their rights'
'continuity or repetitiveness and the aspect of distressing, alarming or threatening may distinguish it from insult'

https://geekfeminism.fandom.com/wiki/Community_anti-harassment/Policy
'This policy is licensed under the Creative Commons Zero license . It is public domain, no credit and no open licencing of your version is required.
If you would like to optionally attribute it, you could use the below text and link to http://geekfeminism.wikia.com/wiki/Community_anti-harassment:
This anti-harassment policy is based on the example policy from the Geek Feminism wiki, created by the Geek Feminism community.
The policy is based on the conference anti-harassment policy, and is the work of Annalee Flower Horne with assistance from Valerie Aurora, Alex Skud Bayley, Tim Chevalier, and Mary Gardiner. '
'example community anti-harassment policy, particularly designed for use in communities that are primarily online'

https://geekfeminism.fandom.com/wiki/Conference_anti-harassment/Policy
'Community content is available under CC-BY-SA unless otherwise noted.'
'originally written for mainstream technical conferences'
'Presentations or similar events should not be stopped for one-time gaffes or minor problems, although a member of conference staff should speak to the presenter afterward. However, staff should take immediate action to politely and calmly stop any presentation or event that repeatedly or seriously violates the anti-harassment policy. For example, simply say "I'm sorry, this presentation cannot be continued at the present time" with no further explanation.'

https://geekfeminism.fandom.com/wiki/Conference_anti-harassment/Example_exception_to_policy
'Community content is available under CC-BY-SA unless otherwise noted.'
'attendees are warned in advance in the program and respectfully given ample warning and opportunity to leave beforehand'

https://en.wikipedia.org/wiki/Greenwashing

https://hackaday.com/2020/01/28/lead-free-solder-alloys-their-properties-and-best-types-for-daily-use/
'La2O3 nanoparticles'

https://www.tesla.com/sites/default/files/about/legal/tesla-supplier-code-of-conduct.pdf
'Suppliers shall adopt a policy and exercise due diligence on the source and chain of custody of the cobalt, tantalum, tin, tungsten, and gold' ... 'High-Risk Areas'

https://en.wikipedia.org/wiki/Android_(operating_system)#Linux_kernel
'Ars Technica wrote that "Although Android is built on top of the Linux kernel, the platform has very little in common with the conventional desktop Linux stack".[202]'
'Retrieved June 20, 2017.' - https://arstechnica.com/gadgets/2009/02/an-introduction-to-google-android-for-developers/

https://en.wikipedia.org/wiki/Free_and_open-source_graphics_device_driver

https://en.wikipedia.org/wiki/Software_engineering_demographics

https://en.wikipedia.org/wiki/Open_access

https://en.wikipedia.org/wiki/Made_in_USA
'According to the FTC, Made in USA means that â€œall or virtually allâ€ the product has been made in the United States of America. The product should contain only negligible foreign content.[23] The FTC Enforcement Policy Statement on U.S. Origin Claims says there is no single "bright line" determining what "all or substantially all" means.[24] The minimum requirement is that the final assembly or processing of the product must take place within the United States. Examples are given on the FTC site; a barbecue grill made of components made in the US with the exception of the knobs may be called "Made in USA" while a garden tool with an imported motor may not.'

https://en.wikipedia.org/wiki/Wilk_v._American_Medical_Ass'n
'Taking into account all of the evidence, I conclude only that the AMA has failed to meet its burden on the issue of whether its concern for the scientific method in support of the boycott of the entire chiropractic profession was objectively reasonable throughout the entire period of the boycott. This finding is not and should not be construed as a judicial endorsement of chiropractic.'
'It would be a difficult task to persuade a court that a boycott and conspiracy designed to contain and eliminate a profession that was licensed in all fifty states at the time the Committee on Quackery disbanded was the only way to satisfy the AMA's concern for the use of scientific method in patient care.'
'The AMA presented no evidence that a public education approach or any other less restrictive approach was beyond the ability or resources of the AMA or had been tried and failed. The AMA obviously was not successful in defeating the licensing of chiropractic on a state by state basis, but that failure does not mean that they had to resort to the highly restrictive means of the boycott. The AMA and other medical societies have managed to change America's health-related conduct by what appears to be good public relations work and there has been no proof that a similar campaign would not have been at least as effective as the boycott in educating consumers about chiropractic and the AMA's concern for scientific method. Based on these findings, I conclude that the AMA has failed to carry its burden of persuasion on the patient care defense.'

https://hackaday.com/2020/06/16/disable-intels-backdoor-on-modern-hardware/

https://hackaday.com/tag/intel-management-engine/
        'something horrible'
        'Intel's Management Engine (ME) is a completely separate computing environment running on Intel chipsets that has access to everything.'
        'When - not 'if' - the ME is finally cracked open, every computer running on a recent Intel chip will have a huge security and privacy issue. Intel's Management Engine is the single most dangerous piece of computer hardware ever created.'

COMPLIANCE_stock

A small amount of stock (<$5k as of 2021) may have been part of frequent, but not pattern day trading, transactions, mostly for the purposes of learning what affects the stock market, buying in to participate in the dividends of the world economy, as well as having access and appreciation of relevant news. As this experiment has largely already provided the education of intuition, the entirety as far as ethically and legally reasonable, may be sold, replaced by an index fund, or the account otherwise closed, if there is any comparably substantial reason to do so.

Any stock awarded as personal compensation will, if at all, only be traded on a simple, straightforward, infrequent basis.

Stock will not be traded on the basis of insider 'material nonpublic' information, etc.

Reference
https://secure.ethicspoint.com/domain/media/en/gui/26171/CodeofEthics.pdf
https://secure.ethicspoint.com/domain/media/en/gui/26171/CodeofEthicsCAN.pdf
        'wait at least 24 hours after the announcement is made before buying or selling'
        'all employees are prohibited from trading in Best Buy stock for 24 hours following the release of quarterly earnings results'
        'Be familiar with trading windows and blackout periods. Some people at Best Buy and certain types of stock transactions are subject to additional trading restrictions â€“ know the rules before you trade.'

https://abc.xyz/investor/other/google-code-of-conduct/
        'prohibition on any Google employee hedging Google stock; and periodic blackout windows when no Google employee may trade Google stock'

COMPLIANCE_trade_published

No article or service is, has been, nor expected will be, personally nor by any personally owned company, contemplated nor underway, that would raise a need for any special arrangements with regard to EAR/CCL (Export Administration Regulations / Commerce Control List) nor ITAR/USML (International Traffic in Arms Regulations / United States Munitions List). Any employment or participation in a corporation that may have such undertakings (eg. space launch) would be expected, if appropriate, in addition to any personal due diligence, to provide such arrangements.

Emphasis is on FLOSS Virtual Reality - publishing proven or expected related FLOSS technology to promote eventual acceptance of its enjoyable benefits.

Most personal technology is not specialized. Usually designed, prototyped, and published, either to document usability, or for personal use. Manufacturing of published technology for sale (eg. plastic ergonomics accessories for VR headsets, PatchRap PCBs) is preferably outsourced. Transfer of hardware or unpublished technology is exceptionally rare, includes due diligence, and is typically very limited commercialized field-testing (eg. NAT traversal reliability) of published FLOSS technology, completion of longstanding projects, or salvage of antiquated inadequate hardware (eg. an older PC/GPU resold).

Relevant organizations are politely and very strongly asked to *please consider encouraging* rather than disrupting the positive effects of VR virtual worlds becoming functional enough as a place for safer socializing, more enjoyable software and hardware design, job opportunity enlightenment, and workforce recruiting. Typical gameplay in a public multiplayer setting (similar to any virtual world) is at least reminiscent of fundamental research, especially insofar as 'the resulting information is ordinarily published and shared broadly', and the benefits are similar. As with web browsers of the past, FLOSS technology for shared 3D space may be essential for interoperability and usability, yet the developers to create to create this technology in a timely manner may be scarcely enough to overcome any additional hurdles.

_ EAR/CCL (https://www.ecfr.gov/current/title-15/subtitle-B/chapter-VII/subchapter-C/part-774) _
*) Encumbers 'published' 'non-standard' 'encryption' unless some requirements met including notice of 'internet location' of 'source code' (Â§ 734.7 (b) , Â§ 742.15 (b) (2)).
 *) Such requirements will be met (ie. notice will be sent) if encryption code is published.
*) Encumbers 'posting on the internet in an electronic format, such as AMF or G-code' of some 'ready' 'firearm' related information (Â§ 734.7 (c)).
 *) Nothing related in any way to any manufacturability of firearms is ever personally anticipated.
*) When practical or possibly necessary, publishing by 'public dissemination (i.e., unlimited distribution) in any form (e.g., not necessarily in published form), including posting on the Internet on sites available to the public' (Â§ 734.7) and/or other specified publishing, will be used.

_ ITAR/USML (https://www.ecfr.gov/current/title-22/chapter-I/subchapter-M/part-121) _
*) Nothing related in any way to the vast majority of enumerated (Â§ 121.1) articles, or services, or related items, is ever personally anticipated.
 *) No interest in launch vehicles (Â§ 121.1) due to SpaceX making excellent and adequate progress (ie. Starlink) toward commercially available space services.

 *) Simulated and new vehicles, not existing vehicles, were intended for joystick button/axis mapping profiles, etc, and compatibility with an existing flight deck would not be at all straightforward.
*) Exempts 'combat games without item signatures or tactics, techniques, and procedures covered by this subchapter' (Â§ 121.1) .
 *) Nothing related not as such currently exempted is personally anticipated.
  *) Multiplayer games (definitively the most urgent VR use cases) do not necessarily inherently include any resources of their own which could be specifically described in any way as precedented 'item signatures or tactics, techniques, and procedures'.
  *) Singleplayer experiences (much already existing) - importantly, clinically useful psychological or neurological VR treatments (eg. PTSD treatment by recreation of historic events) - could be encumbered by such a broad interpretation of this as would seem absurd.
*) Classified information, certain technical data (Â§ 120.10), etc, whether publicly known or not, will not be used in any development.
*) When practical or possibly necessary, the narrower publishing into the 'public domain' (Â§120.11) specified (eg. sales at newsstands and bookstores, periodicals mailings, etc), will be used.

Reference
Such references as ' Â§ 742.15 ' (section sign 742.15) may be searched at 'ecfr.gov' .

https://www.ecfr.gov/

https://www.openresearch.institute/developer-and-participant-policies/
        'No National Defense Participation'
        'contributing to Open Source development for immediate public disclosure, for a purpose other than national defense'
        'Participation for national disaster preparedness and response (for example, by FEMA in the U.S. and many Amateur Radio organizations worldwide) is allowed and encouraged. 'Defense vendors may be required to demonstrate that they are working on a contract with a national disaster preparedness organization such as FEMA.'
        'since we must comply with the export regulations of many nations other than the U.S.'

https://www.openresearch.institute/itar-and-ear-strategy/
        'do these things periodically, publish new material on our web site as close to instantly as possible' ... 'ITAR'
        'EAR, we will make the email notifications required under 742.15(b)(2)'

https://lweb.cfa.harvard.edu/spp/ec/ecdocs/sao_tcp-2019-03-29.pdf
        '2019'
        'The EAR does not control information published on the internet, with the exception of encryption.'
        'ITAR'
                'Â§120.11'
                        'relate basic academic principles'
                        'It is available on the internet where the reader can ascertain that the information has been properly released?'
        'EAR require that the information has been published and the Department of Commerce recognizes â€œpublishingâ€ as posting on the Internet for free'
        'ITAR require that the information has been published in more limited areas: ordinary publication through sales at newsstands and bookstores; subscriptions which are available, without restriction, at libraries open to the public; patent information available at any patent office; unlimited distribution at a conference, meeting, seminar, trade show, or exhibition generally accessible to the public, in the United States; or public release in any form after approval by the cognizant U.S. Government department or agency'

https://www.ecfr.gov/current/title-15/subtitle-B/chapter-VII/subchapter-C/part-734/section-734.3
        'Â§ 734.3' '(b)' '(3)'
                'Are published, as described in Â§ 734.7;'
        'printed book or other printed material setting forth encryption source code is not itself subject to the EAR (see Â§ 734.3(b)(2))'
                '(b)' '(2)'
        'encryption source code in electronic form or media (e.g., computer diskette or CD ROM) remains subject to the EAR (see Â§ 734.17))'
        'Publicly available encryption object code â€œsoftwareâ€ classified under ECCN 5D002 is not subject to the EAR when the corresponding source code meets the criteria specified in Â§ 742.15(b) of the EAR.'
                'source code meets the criteria specified'

https://www.ecfr.gov/current/title-22/chapter-I/subchapter-M/part-120/section-120.11
        'Â§ 120.11 Public domain.'

https://www.ecfr.gov/current/title-15/subtitle-B/chapter-VII/subchapter-C/part-734/section-734.7
        'encryption software' 'remains subject to the EAR' 'unless' 'object code' 'source code' 'meets criteria'
        'remains subject to the EAR' 'firearm' 'such as AMF or G-code' 'and is ready for insertion into a computer numerically controlled machine tool' 'or any other equipment'

https://en.wikipedia.org/wiki/International_Traffic_in_Arms_Regulations
https://en.wikipedia.org/wiki/United_States_Munitions_List

https://www.pmddtc.state.gov/regulations_laws/documents/official_itar/ITAR_Part_121.pdf?id=ddtc_kb_article_page&sys_id=%20249f7c0adb6cf7007ede365e7c9619fd
        'If after reviewing the USML and other relevant parts of the ITAR, in particular ITAR Â§120.3, Â§120.4, and Â§121.1(b), you are unsure of the export jurisdiction of a commodity or service, you should request a CJ determination.'

https://www.ecfr.gov/current/title-22/chapter-I/subchapter-M/part-120/section-120.4
'history of this product's design'
Implying a need to have already designed the product.
'determination of the appeal will be provided, in writing, within 30 days of receipt of the appeal'

https://www.ecfr.gov/current/title-22/chapter-I/subchapter-M/part-120/section-120.3
'Meets the criteria of a defense article or defense service on the U.S. Munitions List' 'or' 'Provides the equivalent performance capabilities of a defense article on the U.S. Munitions List.'

https://www.ecfr.gov/current/title-22/chapter-I/subchapter-M/part-120/section-120.41#p-120.41(b)
'not' 'specially designed' 'if it' 'Meets one of the criteria of Â§ 120.41(b)'
'Was or is being developed as a general purpose commodity or software, i.e., with no knowledge for use in or with a particular commodity'

https://www.ecfr.gov/current/title-22/chapter-I/subchapter-M/part-120?toc=1

https://www.ecfr.gov/current/title-22/chapter-I/subchapter-M/part-121/subject-group-ECFR6cf5c989d9a8d36/section-121.1
'*' 'Any part, component, accessory, attachment, equipment, or system that' '(iii) Is being developed using classified information.' ... 'simulators'
MAJOR - Presumably includes exemption for published as 'Â§ 120.11 Public domain.' but otherwise incurred even if publicly available information is used.
'Rockets'
'range of at least 300 km'
'hobby' 'Such rockets must not contain active controls (e.g., RF, GPS).'
'impulse capacity equal to or greater than'
'Combined cycle, pulsejet, ramjet, or scramjet engines' 'engines'
'Flight control and guidance systems (including guidance sets) specially designed for articles enumerated in paragraph (a)' [Rockets]
'Pneumatic, hydraulic, mechanical, electro-optical, or electromechanical flight control systems (including fly-by-wire systems) and attitude control equipment specially designed for use in the rockets'
'Aircraft'
'aircraft is designed to withstand maximum vertical maneuvering accelerations greater than +3.5g/âˆ’1.5g'
'Radar altimeters with output power management LPI (low probability of intercept) or signal modulation (i.e., frequency hopping, chirping, direct sequence-spectrum spreading) LPI capabilities'
'Direct-cooling thermal electronic package heat exchangers that transfer 20kW of heat or greater at 100W/cm2 or greater.'
'Training'
'(1) System specific simulators that replicate the operation of an individual crew station, a mission system, or a weapon of an end-item that is controlled in this subchapter'
'Training equipment does not include combat games without item signatures or tactics, techniques, and procedures covered by this subchapter.'

https://research.mit.edu/integrity-and-compliance/export-control/information-documents/publicly-available-public-domain-open
'"Open source"' '"public domain" in the IP sense' '"public domain" from the export control perspective'

https://www.millercanfield.com/resources-529.html
'such assistance may constitute either (i) furnishing assistance to foreign persons' ... 'software developer must be vigilant while providing technical support'

https://www.trade.gov/eccn-and-export-administration-regulation-ear99
'EAR99 items can generally be exported without a license but exporters of EAR99 items still need to perform careful due diligence'

https://en.wikipedia.org/wiki/Denied_trade_screening
'demonstrating "reasonable care"'

https://www.cbp.gov/trade/trade-community/programs-outreach/blocked-denied-debarred

https://www.trade.gov/consolidated-screening-list
'Entity List (EL) - Bureau of Industry and Security'
Apparently includes some not entirely prohibited but seemingly high-risk.

https://www.trade.gov/data-visualization/csl-search