



J. Simmons, President  
5722 Craigmont Court  
Huber Heights, OH 45424  
[jrs@mach30.org](mailto:jrs@mach30.org)

Ms. Joy McCoy  
Exempt Organization Specialist  
Internal Revenue Service  
Exempt Organizations  
P. O. Box 2508  
Cincinnati, OH 45201

Dear Ms. McCoy

Enclosed please find our response to your "additional questions" regarding Mach 30's application for exempt status under section 501c3 of the United States Tax Code.

Sincerely,

Joseph "J." Simmons  
President, Mach 30

Internal Revenue Service  
P.O. Box 2508 - Room 4525  
Cincinnati, Ohio 45201

Department of the Treasury

Date: 6/16/11

Mach 30 Inc  
C/o Joseph Simmons  
5722 Craigmont Ct  
Huber Heights, OH 45424-2606

Employer Identification Number:

27-0515679

Person to Contact - Group #:

Joy McCoy - 7828

ID# 0203121

Contact Telephone Numbers:

513-263-3095 Phone

513-263-4590 Fax

Response Due Date:

7/7/11

Dear Applicant:

We need more information before we can complete our consideration of your application for exemption. Please provide the information requested on the enclosure by the response due date shown above. Your response must be signed by an authorized person or an officer whose name is listed on your application. Also, the information you submit should be accompanied by the following declaration:

*Under penalties of perjury, I declare that I have examined this information, including accompanying documents, and, to the best of my knowledge and belief, the information contains all the relevant facts relating to the request for the information, and such facts are true, correct, and complete.*

To facilitate processing of your application, **please attach a copy of this letter to your response.** This will enable us to quickly and accurately associate the additional documents with your case file.

If we do not hear from you within that time, we will assume you no longer want us to consider your application for exemption and will close your case. As a result, the Internal Revenue Service will treat you as a taxable entity. If we receive the information after the response due date, we may ask you to send us a new application.

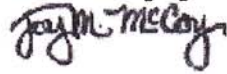
In addition, if you do not respond to the information request by the due date, we will conclude that you have not taken all reasonable steps to complete your application for exemption. Under Code section 7428(b)(2), you must show that you have taken all the reasonable steps to obtain your exemption letter under IRS procedures in a timely manner and exhausted your administrative remedies before you can pursue a declaratory judgment. Accordingly, if you fail to timely provide the information we need to enable us to act on your application, you may lose your rights to a declaratory judgment under Code section 7428.

If you have any questions, please contact the person whose name and telephone number are shown in the heading of this letter.

Letter 1312 (TEDS)

Page 2

Sincerely yours,

A handwritten signature in dark ink, appearing to read "Joy McCoy". The signature is written in a cursive, somewhat stylized script.

Joy McCoy

Exempt Organizations Specialist

Enclosure: Information Request

Letter 1312 (TEDS) Additional Information Requested:

We have reviewed your organization's application for exempt status under section 501(c)(3) of the Internal Revenue Code of 1986, (hereafter "Code"), as amended, and found that additional information is needed to help determine whether you are tax exempt. To complete our consideration we need the following information over the signature of one of your principal officers or directors.

*1. Read the Penalties of Perjury statement on page 1. Then, have an officer or director listed as such in the application sign and date below, indicating you agree to the Declaration. Return this page with your response.*

*J. Simmons, President*

*7/20/11*

*Officer Signature*

*Officer Name & Title*

*Date*

*2. Enclosed is a copy of your Articles of Incorporation and your Amended Articles of Incorporation secured from the website of the state in which you are incorporated. We have made it part of your file. Since we have provided a copy of this information to you, it is available for public inspection as part of your exemption application. Nothing further is necessary regarding this item.*

*3. The enclosed was printed off your website. This is just a courtesy to let you know that this information has been added to your administrative file as it is already public record.*

*4. To insure that your organization will serve public interests and not the personal or private interests of a few individuals, unrelated individuals selected from the community you will serve should control your Board of Directors. Members of the Board should be selected from the following categories; (1) community leaders, such as elected or appointed officials, members of the clergy, educators, civic leaders, or other such individuals representing a broad cross-section of the views and interests of your community, (2) individuals having special knowledge or expertise in your particular field or discipline in which your organization is operating, (3) public officials acting in their capacities as such, (4) individuals selected by public officials, and (5) individuals selected pursuant to your organizations governing instrument or bylaws by a broadly based membership. Therefore, please modify your Board of Directors to place control in the hands of unrelated individuals selected from the community you will serve. We recommend that at least 51% of your board is unrelated, with a minimum of 3 board members. Please submit the enclosed attachment signed by the new board member for each new member. If you are unwilling to do so, please explain your position.*

One output of the Mach 30 Board of Directors 2011 Strategic Planning Session held February 26-27, 2011 was a plan to broaden the base of the board membership. Because Mach 30 exists to significantly alter the conventional wisdom around how spaceflight hardware is designed and built, finding appropriate board members is more difficult than it might be in more

traditional organizations. A sub-committee of the existing board has been assigned the task of identifying the community constituents that could be approached for membership in the Mach 30 Board by Sept 30, 2011. Since our initial filing, Daryn J Warner, has agreed to join the board, and Andrew McGrady has resigned. Thus, over 51% of our board consists of unrelated members. Mr. Warner's affidavit of board membership and Mr. McGrady's letter of resignation are attached.

*5. Your organization states in its narrative description of its activities, that it is organized for scientific purposes. Describe in detail how your organization meets the requirements of a tax-exempt scientific organization as defined in section 501(c) (3) of the Code and section 1.501(c) (3)-1(d) (5) of the Treasury Regulations. Specifically, scientific research must be carried on in the public's interest and does not include scientific research activities of a type ordinarily carried on incident to commercial operations. Examples of scientific research that will be considered carried on in the public's interest include "(1) Scientific research carried on for the purpose of aiding in the scientific education of college or university students; (2) scientific research carried on for the purpose of obtaining scientific information, which is published in a treatise, thesis, trade publication, or in any other form that is available to the interested public; (3) scientific research carried on for the purpose of discovering a cure for a disease; or (4) scientific research carried on for the purpose of aiding a community or geographical area by attracting new industry to the community or area or by encouraging the development of, or retention of, an industry in the community or area." Treas. Regs. §1.501(c) (3)-1(d) (5) (iii).*

Mach 30's scientific mission is to conduct the research and development required to solve the engineering and other technical challenges that are currently making space-based industry financially unfeasible for for-profit entities. This research, as well as the resulting designs and hardware will be freely shared under open source licenses, within the limitations placed upon us by ITAR. In this manner we will make it possible for people and organizations interested in developing their own space-based hardware and/or other ventures to build upon this existing research rather than starting from scratch.

While the research conducted by Mach 30 may be similar to that of for-profit entities in the aerospace industry, the fact that we will make this information widely and easily accessible to the interested public, rather than protect it as a trade secret, makes Mach 30's research of value to the public.

Additionally, through projects like <https://opendesignengine.net/> we will make it possible for other like-minded people and organizations to share their research and engineering work in a similar manner. In this way we will begin to change the culture of the space industry from closed to open.

*6. Will your organization make public on a nondiscriminatory basis any patents, copyrights, processes, formulas, which results from any scientific research conducted by your organization? If yes, describe in detail how your organization intends to make this information public, including*

*a list of publications and websites where this information will be disseminated.*

Yes, all intellectual property (IP) developed by Mach 30 will be freely distributed via the standard open hardware licenses currently being developed in the Open Source Hardware Community (<http://www.openhardwaresummit.org/>). All IP will be shared via the Mach 30 website ([www.mach30.org](http://www.mach30.org)) or the ODE website (<https://opendesignengine.net/>). Announcements of discoveries will also be made via the organization's newsletter (<http://bit.ly/iquHG1> ) which will point readers towards the specific location of new findings.

*7. If applicable, describe any restrictions that will be placed on the dissemination of scientific research results that your organization will make public*

The only research that will not be made freely available is that which is protected by the International Traffic in Arms Regulations (ITAR) policies. Information protected by ITAR will be distributed as widely as possible but in a manner that ensures only United States citizens are able to access it.

*8. Describe whether your organization will retain (directly or indirectly) the ownership or control of the patents, copyrights, processes, or formulae resulting from its research*

Mach 30 will maintain control of the Intellectual Property it develops for the sole purpose of ensuring all discoveries are licensed openly so the research conducted can be easily built upon by others.

*9. In reference to any open source software distributed by your organization, describe whether your organization will retain (directly or indirectly) the ownership or control of the patents, copyrights, processes, or formulae resulting from any updates, upgrades, fixes, or patches created by the public and distributed back to the organization pursuant to any open source license.*

Because open source hardware is a fledgling field, the licenses that will cover our work are still in development. That having been said, Mach 30 expects that most of our engineering work will be licensed in a manner similar to the Apache Software license. This means, that our work will be freely available to the public to build upon, and that the resulting upgrades will belong to the person or organization that creates them. As the IP owner of the upgrade, s/he will be free to license the resulting work however they choose, so long as they acknowledge their work was built upon work done by Mach 30 and provide adequate reference to the work done by Mach 30 for other parties to access the related documentation.

Mach 30 prefers this license (requiring attribution only) to the more common GPL license (requiring derivative works be openly licensed in the same manner as the original work) because it gives for-profit entities more incentive to use our work. In doing so, those entities will positively impact our current economy and are likely to open completely new markets.



*10. Provide a sample copy of all types of licenses your organization plans to issue, and a statement, pertaining to each sample license provided, whether there will be any material deviations from the samples provided and the licenses actually issued by your organization.*

The actual open source hardware licenses that will be used by Mach 30 are still under development by the fledgling open source hardware community. To date, the handful of licenses that have been drafted are all based on the Gnu Public License (GPL), which requires developers who derive a new work from the openly licensed work to license the new work openly as well. This requirement to “share alike” has led some businesses to avoid the use of open source software in their products. Mach 30 prefers the Apache Software license, which only requires attribution to be given by derivative works, as a basis for an open source hardware license, because it is more business friendly. To that end, Mach 30 has drafted its Open Design Pledge, an Apache style open source hardware license, for consideration by the open source hardware community.

Until an attribution-only license for open source hardware has been approved by the community, Mach 30 will use its Open Design Pledge. Once licensing options for open source hardware mature, Mach 30 will adopt the community approved license that most closely aligns with the its Open Design Pledge, without modification, except as is required to comply with ITAR regulations. We have included copies of the first drafts of open source hardware licenses being developed based on the GPL, a copy of the GPL, the open source software and hardware definitions, Mach 30’s open design pledge, and the Creative Commons Attribution-Only License (which is referenced by the Open Design Pledge and is similar to the Apache Software License, but covers copyrighted works other than software) in the attachments.

*11. Describe what scientific results the organization hopes to achieve, such as software, industry standards, etc.*

Mach 30 hopes to achieve -- directly and through assisting others -- development of the software, safety standards and regulations, and hardware (such as launch vehicles, space stations, and planetary exploration systems) necessary to enable humanity to regularly engage in safe, sustainable, routine, and reliable spaceflight.

*12. Describe to whom will be attributed ownership of any intellectual property rights developed by the organization.*

Intellectual property rights for material developed by Mach 30 will remain with the organization, and be licensed to allow free, attribution-only use of the IP by the general public.

*13. Has the organization developed an alpha version of any software? If yes, describe in detail the software, its purpose, and how it was developed.*

Open Design Engine (ODE) - ODE is a web based engineering project management system created to facilitate the design and development of openly licensed hardware projects. ODE provides a critical service to the growing open source hardware community, similar to the role Source Forge played in the early growth of open source software. Open source hardware projects today have to cobble together wikis, forums, online polls, blogs, and file storage to share their materials. ODE integrates these services into a single system, and provides a destination for users looking for open source hardware projects to build or to extend.

ODE is based on the open source software Redmine and is licensed under the GNU General Public License v2 (GPL). ODE is being distributed in a similar manner to WordPress. That means there will be a version available for download that users can install on their own servers (like <http://wordpress.org>) and a hosted version where users can register accounts and host projects (like <http://wordpress.com>). Visit ODE at <https://opendesignengine.net/>.

ODE is currently being developed by the Mach 30 President with support from a Mach 30 volunteer. All of the source code, documentation, and planning for the project can be seen on the ODE project page (<https://opendesignengine.net/projects/ode>) hosted on ODE. Using ODE to host the development of the ODE software ensures the public has complete access to the ODE materials, and allows Mach 30 to demonstrate the utility of ODE as a project management tool.

*14. Your organization states in its narrative description of activities that it is organized for educational purposes. Describe in detail how your organization meets the requirements of a tax-exempt educational organization as defined in section 501(c) (3) of the Code and section 1.501(c) (3)-1(d) (3) of the Treasury Regulations. Specifically: a qualifying 501(c) (3) educational organization must be operated to (i) instruct or train the individual for the purposes of improving or developing his/her capabilities t or (ii) instruct the public on subjects useful to the individual and beneficial to the community. Treas. Regs. §1.501(c) (3)-1(d) (3) (i). Pursuant to the Treasury Regulations, an example of a qualifying educational organization is an organization whose activities consist of presenting public discussion groups, forums, panels, lectures, or other similar programs. Treas. Regs. §1.501(c) (3)-1(d) (3) (ii)*

In addition to our scientific purposes, Mach 30 endeavors to increase the general public's interest in and support for space exploration through educational programs. Because these educational programs will evolve over time, we cannot predict the full scope of this work. Our first educational program is the "Rockets 101" self-study course which is designed to make it easier for new people to gain entry into model rocketry, a hobby that has been the point of entry into the space industry for many individuals. The goal of this, and future educational programs is both to support and encourage a growing interest in technical, especially space-related, skills among the general population, especially young people.

*15. Describe on what topic(s) your organization is attempting to educate the public.*



Our educational outreach is focused on developing a culture that embraces the idea of a spacefaring society. To that end we will encourage an interest in developing the technical skills required to build the vehicles and systems required to transport people into space safely, routinely, and reliably. In addition we will develop educational programs that help ignite the imagination of the general population about what might be possible in a society where space travel is as common as air travel is today. In doing so we will help create the societal demand for regular space travel that will be required for a true space economy to develop.

*16. Provide a list of and copies of all individual training, instructional material or educational material your organization utilizes in achieving its educational purpose.*

The training manual for our existing Rockets 101 self-study course is attached. We plan to develop a similar self study course to walk people through the NAR silver certification requirements in 2012.

*17. Provide a list of and copies of all individual training, instructional material or educational material published by your organization.*

see above.

*18. Provide a schedule of dates, times, and locations of all educational lectures, seminars, forums, classroom instruction or similar programs your organization sponsored for the purpose of meeting its educational requirement.*

For the foreseeable future, Mach 30 educational programs will be distributed on-line as self-study courses. When future educational events are scheduled information about the events will be prominently displayed on the website and through the organization's newsletter. As is possible, video/audio recordings of lectures as well as handouts will also be shared freely on the website.

*19. Does your organization publish an educational journal? If SO provide copies of said journal.*

Mach 30 does not publish a journal.

*20. Does your organization have a physical location to which the public arrives to receive education? Describe said facility.*

As of now, Mach 30 educational programs are delivered via the Internet or at community locations not controlled by Mach 30.

*21. If education material is presented via the organizations website provide links to the web sites along with hard copies of materials posted on the website. Please also provide any*

*materials that are in "members only sections, on any Facebook/Twitter/etc. pages.*

"Rocket Science 101" This is the curriculum planning for a day long course/event to build and fly all 4 NAR bronze level certification flights in one day. ([https://docs.google.com/document/d/1xPnxKT2UH80yIsr\\_Qml1vEnmOn1dKS4CEBXIz8C9lko/edit?hl=en\\_US](https://docs.google.com/document/d/1xPnxKT2UH80yIsr_Qml1vEnmOn1dKS4CEBXIz8C9lko/edit?hl=en_US)).

"Rockets 101 Manual" This is the instructional guide to walk an individual through the steps necessary to achieve NAR Bronze level certification on their own. ([https://docs.google.com/document/d/1cl2-dcNBpBWFuUzb5M7\\_NRf1o5WgrHVnDG65xQ8Wdtk/edit?hl=en\\_US](https://docs.google.com/document/d/1cl2-dcNBpBWFuUzb5M7_NRf1o5WgrHVnDG65xQ8Wdtk/edit?hl=en_US))

Mach 30 does not publish any material that is not freely available to the public.

*22. If the organization provides an Internet forum for the public to ask questions about the organizations activities then provide the following information:*

Mach 30 does not have a dedicated forum, but we do provide many ways for the public to ask questions, receive feedback and interact with the open source spaceflight hardware community as a whole through the Mach 30 website (<http://mach30.org>), Facebook Page (<http://www.facebook.com/Mach30>), Twitter profile ([http://twitter.com/#!/mach\\_30](http://twitter.com/#!/mach_30)) and the Open Source Spaceflight hardware SubReddit (<http://www.reddit.com/r/osshw/>). When complete, Open Design Engine (<https://opendesignengine.net/>) and Openeering (<http://openeering.wikispaces.com/>) will also have forum-like opportunities for community participation.

*a. Describe how the forum is operated and moderated;*

Mach 30's Facebook group page is operated by Facebook and moderated using the Facebook terms of service. Three Mach 30 board members are administrators to this site and frequently post content and comment on recent activity. Similarly, the Mach 30 Twitter account is managed by a Mach 30 board member who shares information about the organization's work, checks for and responds to comments about the organization's work on a daily basis.

Additionally, the Mach 30 website (<http://mach30.org>) (recently ported to Wordpress.com) is designed to provide 2-way communication between Mach 30 and the public through open comment threads below each blog post, and through a simple contact form (<http://mach30.org/contact/>). Unlike traditional forums, neither form of communication available on the Mach 30 website requires visitors to create an account of any kind, thus making it very easy for the public to participate in the work of Mach 30.

Mach 30 is also in the process of organizing a way for all of the people and organizations interested in pursuing the concept of open source spaceflight to share ideas, questions, and requests for assistance on neutral ground. This site can be found here: <http://www.reddit.com/r/osshw/>. Reddit was chosen as the location of this neutral site because of its popularity among people likely to support the concept of open source spaceflight and because it provides easy

ways for the site's moderation responsibilities to be shared equally among the organizations represented there.

In addition to making it easy for the public to contact us, we also make it easy for interested parties to find the information they are looking for. The minutes for every Mach 30 meeting are shared publicly on Google Docs and a direct link to these minutes is provided from the website's main menu navigation. The same is true for the organization's current budget and all of our incorporation paperwork.

*b. Describe the organizations process of responding to questions; and*

When possible, our board member responsible for marketing and social media responds to questions directly. When the response requires specific technical expertise, she passes the question on to the appropriate party.

*c. Describe whether the forum is open to the public that is, the general public is able to respond to and answer questions posted on the forum.*

All of these communication methods are freely available to the public and as such any interested party is able to ask and respond to questions. As part of our communications strategy Mach 30 is actively working to increase interaction between Mach 30 board members and interested members of the public.

*23. Describe your organization's use of volunteers, including:*

*a. What percentage of the organization's labor force is comprised of volunteers;*

100%

*b. What range of duties do the volunteers undertake;*

All duties are conducted by volunteers, therefore the range of duties performed by volunteers is the set of all duties for which Mach 30 is responsible.

*c. What percentage of the organization's volunteers have fixed hours or days on which they are required to be present for the organizations activities;*

While Mach 30's monthly Board meetings are scheduled in advance, and board members are expected to participate at the appointed time, the majority of volunteer work done on behalf of Mach 30 is done as the volunteer's schedule allows, not based on fixed hours or days set by Mach 30.

*d. What percentage of the organization's volunteers report to organization's physical location to volunteer;*

0%; Mach 30 has no physical location.

*and, e. What percentage of the organization's volunteers conduct their volunteer activities via the Internet and/or email.*

100% as Internet, phone, and email collaboration are required to coordinate most activities even if the bulk of the activity is conducted in the volunteer's respective location(s). Additionally, some portion of the activities will be posted online at completion (results, videos, photos, etc) as Mach 30 does not currently have a physical location.

*24. Provide an updated copy of the Financial Data referenced on Part IX of your 1023 Application.*

Attached

*25. Describe in detail your fund raising efforts pertaining to line 1, of Part IX. Include a list of all pending grants.*

In 2009 Mach 30 raised \$625 through donations and by conducting an online fundraising campaign. In 2010 Mach 30 raised \$750 through another such campaign. In 2011, Mach 30 will begin fundraising in earnest and has two major online campaigns planned, one for general support and one for support of Open Design Engine (<https://opendesignengine.net/>). We are also planning to sell sponsorships for the ODE site and hold two fundraising parties. We expect our fundraising efforts for 2012 to be similar to our plans in 2011. Mach 30 has no pending grant applications, nor do we expect to apply for grants in the foreseeable future.

*26. Describe in detail your expenses listed on line 20, of Part IX.*

At the time of submission, Mach 30 was planning to rent workshop space in which to conduct its hardware development projects. Because our online growth has been slower than originally predicted, that plan has since been postponed and that budget line item has been zeroed out for the foreseeable future. When Mach 30 grows to the point where renting physical space becomes necessary, we expect the yearly expense for rent, utilities, etc to be in-line with our original estimate for 2012.

*27. Describe in detail your expenses listed on line 22, of Part IX.*

In 2010 Mach 30 spent \$500 to apply for 501c3 status (this expense was inadvertently listed in the professional fees line, and has since been moved to line 23 where it belongs). The professional fees in 2011 and 2012 will be used to pay an accountant and lawyer. In addition

to having our organizational documents reviewed, we expect to need regular legal council to assist Mach 30 in navigating the various legal issues associated with Mach 30 activities, such as creating appropriate legal waivers for volunteers.

*28. Describe in detail your expenses listed on line 23, of Part IX.*

See Attached

*29. Describe whether your organization provides any goods or services for a fee. If yes, describe in detail the goods or services sold and the fees charged.*

As of now, Mach 30 does not provide any services or goods for fees or other compensation. If Mach 30 were to be compensated for engineering work in the future it would be under these conditions: 1) the completed work directly served Mach 30's mission and 2) the completed work was openly licensed and available not only to the organization paying for the work, but also to the general public. In this way work done "for a fee" is more like a donation/sponsorship from a company interested in insuring a particular piece of research gets done quickly, than as a traditional purchase of services or IP.

*30. Describe whether your organization's members, directors, officers, employees or volunteers provide any goods or services (whether through the organization or on their own) for a fee pertaining to the goods or services the organization provides.*

As of now, Mach 30 provides no goods or services. Additionally, Mach 30's members, directors, officers and volunteers currently receive no financial compensation for any of the work they do for Mach 30.

*31. Your activities state that 50% of the activities is to develop openly licensed hardware, 20% of the activities is supporting the open design community at large, and 10% of the activities is to develop new enabling spaceflight technologies. Only 20% of your activities is education and outreach, part of which is presenting at industry technical conferences.*

*Please explain how your activities fulfill exclusively exempt purpose(s) under Section 501(c) (3). Please also explain how your organization is different than that of a commercial organization with similar activities and purposes.*

The goal of Mach 30 is to use these activities to build a shared base upon which future commercial and non-commercial organizations can build their own work. The inclusion of presentations at technical conferences is to ensure that traditional aerospace companies and their employees become aware of the availability of our research and designs.

While Mach 30 is doing work that is similar to the work done by a new aerospace engineering

company, the difference is that Mach 30 will make all of their research and designs completely available to the public at no charge, including to more traditional aerospace companies, something that no for-profit aerospace company, or even NASA, is doing today. In doing so, Mach 30's work makes it possible for new commercial enterprises to build upon our work instead of having to develop an entire space launch infrastructure for themselves, thus making it more likely that they will be able to reach profitability before they run out of money. This will lead to a vibrant and diverse space-based economy, and provide detailed examples of space systems for use in academic studies. It also makes our work exempt under the following sections 501(c): (2) *scientific research carried on for the purpose of obtaining scientific information, which is published in a treatise, thesis, trade publication, or in any other form that is available to the interested public;* (4) *scientific research carried on for the purpose of aiding a community or geographical area by attracting new industry to the community or area or by encouraging the development of, or retention of, an industry in the community or area."* Treas. Regs. §1.501(c) (3)-1(d) (5) (iii).

*32. You indicate that there is an agreement between your organization and TAPR. Please send us a copy of this agreement. Please explain the roles of each entity and give us more detailed information.*

While we are working with TAPR members toward the mutually beneficial goal of assuring diverse open source hardware licenses are developed, this agreement is not formal. There is no written agreement, nor have specific roles been established.

*33. You indicate that there will be an online catalog. What will this online catalog contain? Please give us more details regarding your online catalog.*

The Openeering Wiki (<http://openeering.wikispaces.com/>) is a website for the discussion of tools and techniques that make open source hardware affordable. Inspired by the "Open Source Engineering Tools " page on DevelopSpace.net, the Openeering Wiki expands the idea of an online catalog of open source tools into an online community using the WikiSpaces integrated per page forums feature. Users are encourage to not only help catalog the available software, books, and other tools available under open or free licenses, but to also discuss those tools in the forums attached to each page. Any and all topics related to the tools are welcome, including everything from how to select the right tool for a given problem to what sites provide the best answers to support questions for a given tool.

*Please also explain how it furthers an exclusively exempt purpose under Section 501 (c) (3) .*

The Openeering Wiki furthers the exclusively tax exempt purpose of Mach 30 by eliminating the barriers to participate as a volunteer in the open source hardware projects which account for 50% of Mach 30's activities. Most commercial engineering software and tools cost thousands, to tens of thousands of dollars per seat, making these tools prohibitively expensive for most individuals to purchase, especially in support of their own volunteer activities. Contrast this



with the availability of completely free and open source tools available to software developers. The availability of such free tools makes it possible for volunteers to participate in open source software projects with little to no cost to themselves. The catalog and forums provided by the Openengineering Wiki allow users to find and support free and open source engineering tools, which are essential to allow volunteers to participate in the development of the open source hardware projects Mach 30 will be developing.

*34. You indicate that you will provide your "Rocket Shop" to people working on their NAR certifications. Please give us more information on what a NAR certification is. will these people be working on items that they will hold intellectual rights to? will they be working on items that they will financially benefit from being able to sell? How does this activity further an exclusively exempt purpose under Section 501(c) (3)? Also, if the people using this space will benefit from the items they work on there, how is it not private benefit to them?*

NAR, The National Association of Rocketry ([www.nar.com](http://www.nar.com)) is a 501(c)(3) organization for rocketry hobbyists. Participants in Mach 30 training classes such as the Rockets 101 class will be working on model rockets. The NAR certifications Mach 30 materials currently cover require the participants to build rockets from existing kits, which the participants will be required to purchase for themselves. These rockets have no value beyond their purchase price. The only benefit of working together in the Rocket Shop is the opportunity to build these rockets in a classroom environment where participants can listen to the training materials presented by Mach 30 and where they can seek guidance and support from Mach 30 trainers and fellow participants as they build their own rockets.

The educational value of this endeavor under Section 501(c)(3), and the reason Mach 30 is taking it on, is to increase general interest in aerospace engineering skills and careers. While the model rockets themselves may not amount to much, people who build model rockets, especially when they are young, develop a life long interest in technical pursuits. It is our hope that many of the people who start their work with Mach 30 by building model rockets, will "grow up with us" and eventually make more substantial volunteer contributions to the design and development of more substantial space hardware.

Also note that while Mach 30 eventually hopes to have a physical location in which to hold such training, Rockets 101 courses will be self-study courses delivered via the Internet for the foreseeable future.

*35. Do you have any links to a for-profit organization? Please submit a statement as to whether you do or not.*

We have no links to for-profit organizations.

*If you do have a relationship with any for-profit, please address the following:  
Separately, for EACH organization that is a related organization or is an organization you are partnered/affiliated with, please answer the following:*

- a. Name the organization you have a relationship or affiliation with.
- b. Give us their EIN (if you have it).
- c. Are they a domestic or foreign entity?
- d. Describe the nature of their business?
- e. Describe your relationship with them.
- f. Describe any space you share with them. Under what conditions?
- g. Describe any overlapping of officers. Under what conditions?
- h. Describe any overlapping of activities.
- i. Describe any services they provide to you. Describe how they were selected to provide those services. Describe how the prices were determined and how it was determined that they were at or below fair market value.
- j. Remit copies of any contracts, agreements, etc. that you have with them. If you do have a verbal agreement, please describe it.
- k. Any other information you feel is pertinent to this issue.

*Please provide detailed answers to these questions.*

## ATTACHMENTS

- Rockets 101 manual
- Rockets 101 syllabus
- Daryn Warner's notice of joining the board
- Andy McGrady's letter of resignation
- Link to info about NAR Certification
- Updated financials based on consensed budget (on 1023 Form)
- List of expenses in line 23 for 2011 & 2012
- Detail for Grants to be awarded
- Copy of "Kites" Grant application
- CERN Open Hardware Licence (based on GPL) <http://www.ohwr.org/projects/ohr-meta/wiki/CERNOHL>
- Apache Software Licence <http://www.apache.org/licenses/LICENSE-2.0.html>
- Open Source Hardware Definition: <http://freedomdefined.org/OSHW>
- Mach 30 Open Design Pledge: <http://mach30.org/about/mach-30-open-design-pledge/>
- TAPR Open Hardware Licence: <http://www.tapr.org/ohl.html>
- GPL Licence <http://www.gnu.org/copyleft/gpl.html>
- CC Attribution License <http://creativecommons.org/licenses/by/3.0/>
- Open Source Software Definition <http://opensource.org/docs/osd>

## Rockets 101 Manual

### Introduction

Rockets 101 covers the steps necessary to complete the National Association of Rocketry (NAR) Bronze certification. You must apply for membership in NAR to formally complete the Bronze certification. Visit the NAR membership page (<http://www.nar.org/NARjoin.html>) for more information.



Building the model rockets for Bronze certification

The NAR Bronze certification (<http://www.nar.org/pdf/NTBronze.pdf>) is the first level in the NARTREK program (<http://www.nar.org/NARTREK/>). The bronze level requires participants to build a set of model rockets from kits to perform four missions.

- At least 60 second duration flight (parachute recovery and motor size "B" or less).
- At least 30 second duration flight (streamer recovery and motor size "B" or less).
- A 2-stage model rocket flight (using at least a motor size "A" or larger in each stage).
- A rocket flight using a motor at least size "D" or larger.

This manual documents a selection of model rocket kits, and construction techniques which have proven successful in obtaining a Bronze certification.

### A note on safety

This manual is a work of [Mach 30](#) and is licensed under the [Creative Commons Attribution 3.0 Unported License](#).

All NAR members are required to follow the NAR Model Rocket Safety Code (<http://www.nar.org/NARmrsc.html>). Before launching any rockets be sure to review the safety and certification rules FOR EACH FLIGHT. Photographs provide good documentation of progress and may be required to verify completion. Paperwork is required in all cases.

### Selected model rocket kits

The NARTEK program allows the same rocket to be used to complete multiple missions, allowing the Bronze certification to be completed with only three rockets. They are the Estes Hi-Flier, the Custom Rocketry Aztec, and the Estes Big Daddy. See below for details.

- Estes Hi-Flier  
<http://www.estesrockets.com/002178-hi-flierr>  
**60 sec flight:** Use B6-4 motor and replace streamer from kit with 12 inch Estes parachute (<http://www.estesrockets.com/parts/302264-12-parachute>).  
**30 sec flight:** Use B6-4 motor and use the streamer included with the kit.
- Custom Rocketry Aztec  
<http://www.customrocketcompany.com/store/index.html?loadfile=item10026.html>  
**2 stage flight:** Use B6-0 (first stage) and B6-4 (second stage) with included streamer.
- Estes Big Daddy  
<http://www.estesrockets.com/rockets/kits/skill-2/02162-big-daddytm>  
**“D+” motor flight:** Use D12-3 motor with included parachute.

### Notes on assembly

The recommended assembly order is the Big Daddy, followed by the Hi-Flier, and finishing with the Aztec. This assembly order allows builders to gain experience with the large and sturdy Big Daddy, whose larger size makes all of the components easy to work with, and work toward the more complicated two-stage Aztec. Builders may find this video (<http://www.youtube.com/watch?v=Kpk0kslQeWE>) of the Hi-Flier assembly a useful primer on the basic techniques of rocket assembly.

Successful model rocket assembly relies on well chosen kits, carefully following the assembly instructions, and using the right glue. Two glues have proven to be very useful for the model rocket kits listed above.



- Titebond II Premium Wood Glue  
<http://www.titebond.com/IntroPageTB.ASP?UserType=1&ProdSel=ProductCategoryTB.asp?prodcats=1>  
This glue forms tight bonds and dries very quickly. It should be used for all assembly steps except initial fin placement. It is particularly well suited to making fillets. Note, transfer this glue to small squeeze bottle for improved application.

- Aleene's Fast Grab Tacky Glue  
<http://www.michaels.com/Aleene%27s%C2%AE-Fast-Grab-Tacky-Glue/gc0459.default.pd.html>  
The Fast Grab Tacky glue is perfect for initial fin placement. It grabs instantly, with a firm, but yielding grip which keeps the fins where they are placed, but still allows for small adjustments during initial placement. Be sure to come back after this glue dries and apply fillets using the Titebond II wood glue.

### **Launch equipment**

With the rockets complete, it is time to launch them. NAR requires members working toward their Bronze certification to have all the required equipment to launch their rockets. This includes a launch pad, a controller, wadding, and the motors with igniters. At this early stage, and compatible set of launch equipment will be sufficient, such as the following.

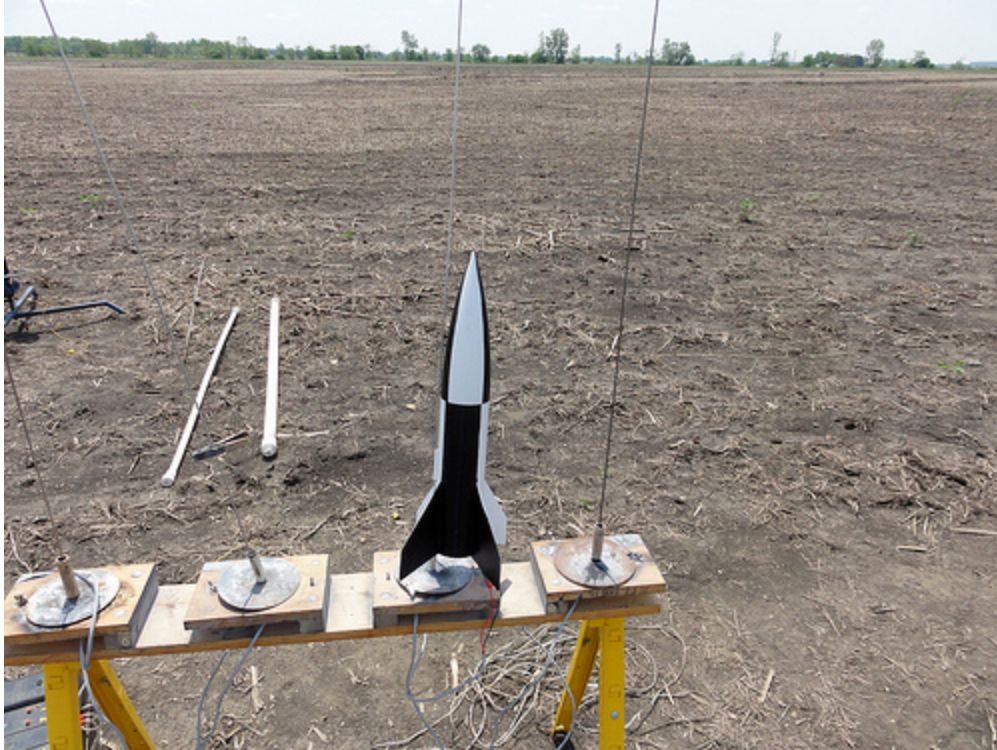
- Launch Pad - Estes Porta-Pad II  
<http://www.estesrockets.com/rockets/accessories/launch-systems/302215-porta-padr-ii-launch-pad>
- Controller - Estes Electron Beam Controller  
<http://www.estesrockets.com/rockets/accessories/launch-systems/302220-electron-beamr-launch-controller>
- Wadding - Estes Recovery Wadding  
<http://www.estesrockets.com/rockets/accessories/tools-supplies/302274-recovery-wadding>
- Motors and igniters - Estes motors with included igniters as specified above

It is worth noting that Estes provides a number of introductory kits which include their Porta-Pad II and Electron Beam Controller plus one or two entry rockets for approximately the same price as the pad and controller combined if bought separately. A list of current kits can be found on their website (<http://www.estesrockets.com/rockets/launch-sets>).

### **Day of launch**

To complete the Bronze certification, the NAR member must fly each of the four missions under the supervision of another, appropriately certified, NAR member. This can most easily be arranged at local NAR chapter launch days. Be sure to complete the Bronze level paperwork (<http://www.nar.org/pdf/NTBronze.pdf>) and bring it to the launch. Note, the paperwork requires photographs of each of the rockets. After completing all four requirements, mail the signed and completed paperwork to NAR, with the nominal registration fee.





Big Daddy ready for launch

#### Other useful resources

- A personal listing of NARTREK missions  
<http://mcfisher.0catch.com/other/nartrek/nartrek.htm>
- NAR documentation of model rocket motor codes  
<http://www.nar.org/NARmotors.html>
- Blog post detailing flight day experience following Rockets 101 Manual  
<http://mach30.org/blogs/jrs/2011-05-22-rockets-101-update-a-story-of-preparation-and-clever-hacks>



# Rocket Science 101 - Syllabus

Purpose: This is an educational course designed to teach the basics of low power rocketry. In addition, the participants will get the hands-on opportunity to build and fly model rockets in pursuit of the NAR bronze achievement level.

Background: As an educational program of Mach 30: Foundation for Space Development, Rocket Science 101 accomplishes multiple mission areas.

Agenda: (08:15 - 16:30-ish?)

Rocket Anatomy	15-25 min
NAR certification levels (low/high power)	10-15 min
Manufacturing Techniques	30-45 min
Rocket Builds	3 hours
Lunch	
Brief History of Rockets	5-10 min
Basics of Flight Stability	10-15 min
Basics of propulsion	10-15 min
Launch Window	3 hours

Materials for Academics:

PowerPoint slides  
Worksheets  
Handouts  
Rocket Models and visual aids

Materials for Rocket Building:

Model kits  
Spare parts for Model kits  
glue(s)  
ruler(s)  
hobby knife(s)  
sand paper  
pencil  
spray paint  
table covering/newspaper  
jigs for drawing straight lines on rocket bodies (built like the corner of a door jam)

Materials for launch:

Rocket Motors and igniters  
Launch pad  
Ignition system

spare batteries

Necessary Personnel:

Academic instructor(s)

Manufacturing mentors

Launch pad manager

Range Safety Officer

Recovery team (with ladders, long poles, and access to the school roof)

-----<page break>-----

Course Outline:

- Rocket Anatomy
  - Nomenclature1
    - Propulsion
    - Aerodynamics
    - Recovery
    - Structure
  - Nomenclature2
    - nosecone
    - bodytube
    - shock cord
    - parachute and shroud lines
    - fins
    - launch lug
    - engine mount
    - motor
    - motor retainment clip
    - igniter
    - engine plug
- NAR Certification Levels
  - Low power
    - Bronze, 4 flights
    - Silver, 3 flights
    - Gold, 1 design, 1 build, 1 fly
  - High power
    - Level 1
    - Level 2
    - Level 3
- Manufacturing Techniques
  - Follow Directions
  - Precision
  - Using glue & epoxy
  - Fins & launch lug placement
  - Nosecone <--> Bodytube fit

- Engine mount <--> Bodytube fit
-

- Rocket Assembly
  - Hi-flier kit
  - (plan for glue drying time)
  - 
  - (plan for glue drying time)
  - 
  - (plan for glue drying time)
  - Big Daddy
  - (plan for glue drying time)
- Lunch Time
- Brief History:
  - Robert Goddard & Verner VonBraun, WW II, X-15, Saturn V, Lifting Bodies, NASA's Space Transportation System, (aka Space Shuttle), Future concepts
- Basics of Flight Stability
  - Aerodynamics of
    - Lift
    - Drag
    - Weight
    - Thrust
  - Center of Gravity
  - Center of Pressure
  - Stability Margin
  - Aerodynamic structures
- Basics of Propulsion
  - Combustion
  - Engine design:
    - combustion chamber
    - throat
    - nozzle
  - Propulsion structures
- Launch time
- Sign off the paperwork and wrap up

STATEMENT OF BOARD MEMBER

I, Daryn James Warner hereby agree to participate on the Board of  
(Name of board member)

Directors for Mach 30  
(Organization name)

In doing so, I will take an active part in the operation and decision making processes of this organization. In addition, I hereby state that I will not be compensated for my participation as a director, nor am I related to any existing board members or officers of the organization. My qualifications are as stated below:

---

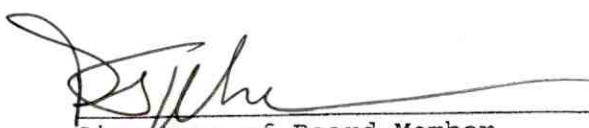
I have worked for not-for-profit organizations for 13 years, all with an education and community engagement focus. I am an expert on program design, strategic communication, and monitoring and evaluation. I hold an MA in Public and International Affairs and an MFA in not-for-profit Arts Management.

---

---

To insure that our organization will serve public interests and not the personal or private interests of a few individuals, unrelated individuals selected from the community will serve on and control our Board of Directors.

Members of the Board will be selected from the following categories; (1) community leaders, such as elected or appointed officials, members of the clergy, educators, civic leaders, or other such individuals representing a broad cross-section of the views and interests of your community, (2) individuals having special knowledge or expertise in your particular field or discipline in which your organization is operating, (3) public officials acting in their capacities as such, (4) individuals selected by public officials, and (5) individuals selected pursuant to your organizations governing instrument or bylaws by a broadly based membership.

  
Signature of Board Member

12 July 2011  
Date

STATEMENT OF BOARD MEMBER

I, Daryn James Warner hereby agree to participate on the Board of  
(Name of board member)

Directors for Mach 30  
(Organization name)

In doing so, I will take an active part in the operation and decision making processes of this organization. In addition, I hereby state that I will not be compensated for my participation as a director, nor am I related to any existing board members or officers of the organization. My qualifications are as stated below:

I have worked for not-for-profit organizations for 13 years, all with an education and community engagement focus. I am an expert on program design, strategic communication, and monitoring and evaluation. I hold a MA in both Public and International Affairs and not-for-profit Arts Management.

To insure that our organization will serve public interests and not the personal or private interests of a few individuals, unrelated individuals selected from the community will serve on and control our Board of Directors.

Members of the Board will be selected from the following categories; (1) community leaders, such as elected or appointed officials, members of the clergy, educators, civic leaders, or other such individuals representing a broad cross-section of the views and interests of your community, (2) individuals having special knowledge or expertise in your particular field or discipline in which your organization is operating, (3) public officials acting in their capacities as such, (4) individuals selected by public officials, and (5) individuals selected pursuant to your organizations governing instrument or bylaws by a broadly based membership.

  
Signature of Board Member

12 July 2011  
Date



[About the NAR](#)

[Team America](#)

[Model Rocket Info  
\(G and under\)](#)

[High Power Info  
\(over G motors\)](#)

[Educational Resources](#)

[Find A Launch](#)

[Find A Local Club](#)

[Safety Information](#)

[Rocket Motor  
Information](#)

[Contest Flying](#)

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CALL NAR  
**800-262-4872**  
P.O. Box 407  
Marion, IA 52302

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## Rocket Skills Program

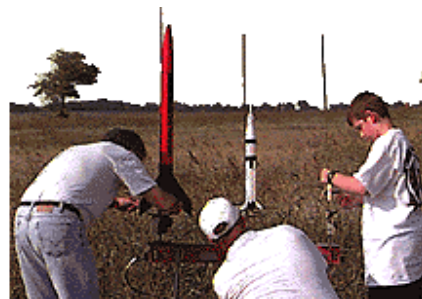
Are you a rocketeer under age 18,  
member of the NAR or not?

Check out our new  
**NARTREK Cadet Program**  
designed especially for you!

### What is NARTREK?

NARTREK stands for "National Association of Rocketry Training Rocketeers for Experience and Knowledge." It consists of a series of achievement levels in rocketry, each requiring more skill to complete than the previous one.

As each level is finished, you receive an Achievement Certificate and a jacket patch certifying your accomplishment. You are under no time limit. You progress at your own pace.



[NARTREK skills program offers a special new incentive program for 2010](#)

### NARTREK.

- is a self-paced program designed to improve your knowledge and skill in rocketry step by step.
- is for all modelers -- young and old!
- is a program for modelers working alone -- as well as for modelers affiliated with NAR Sections.
- operates on the honor system.
- is administered from a central point by a staff of experienced volunteers who will work with you by mail to help solve your problems.
- uses commercially-available rocket kits whenever possible.
- uses existing publications and books available from [NAR Technical Services](#), manufacturers, and other easily available sources.
- is designed to be low-cost to you. NAR makes no profit from the NARTREK program. You buy your own kits, motors, equipment, and publications.

NARTREK is a program designed for you, with patches and certificates for each achievement level and recognition of your progress in NAR publications.

When you complete the entire NARTREK program, you will be capable of designing, building, and safely flying nearly every type of rocket. You will be ready to progress into the most advanced areas of rocketry -- national and international competition, advanced technical research, historical research, and more.

### **How Does NARTREK Work?**

To participate, you must meet the basic NARTREK program requirements.

Fill out the application form and mail it to NARTREK Base along with your entry fee - or, take advantage of our introductory web-based "try it before you buy it" program.

Your program packet for the first (Bronze) level will contain details of each requirement, a list of recommended materials and publications to help you complete this level, and certification forms for each requirement.

At your own pace, complete each requirement. If you run into problems, contact NARTREK Base, who will put you in contact with someone who can help.

As you complete each requirement, fill out the certification form.

When you have completed all the certification forms for your current level, mail them in to NARTREK Base.

NARTREK Base will evaluate your certifications and send back your Achievement Certificate, along with the appropriate jacket patch. If you have signed up for additional program levels, the next packet will be sent to you automatically.

You may sign up for additional levels at any time.

### **NARTREK Program Outline**

The program has three basic achievement levels: Bronze, Silver, and Gold.

Beyond the Gold level, there are seven advanced achievement areas available:

- Research & Development
- Ground Support
- Static Display
- Super Scale
- Plastic Model Conversion
- Radio Controlled Boost/Glider
- Competition

New advanced programs are added from time to time.

### **Example: The Bronze Level**

Everyone begins at the simplest level. To fulfill the requirements of the Bronze level, you must:

- Perform a 60-second parachute duration flight with a kit model.
- Perform a 30-second streamer duration flight with a kit model.
- Perform a two-staged flight with a kit model.
- Perform a large model flight (D motor or above) with a kit model.

Upon completing these requirements you move to the next level: Silver.

### **No Pressure**

Remember: once you start a NARTREK Achievement Level, you don't have to complete it within any time limit. In fact, you don't ever have to complete it at all!



NARTREK is designed to increase your enjoyment of rocketry, not your stress level. So don't "work" at it -- have fun!

## Requirements

You must [be a member](#) of the National Association of Rocketry.




You must have built and flown at least one single-stage rocket using a kit.

You must have your own launching equipment. Your NAR Section may use a rack launch system, but it is important that you understand the fundamentals of the ignition and launching of sport rockets. This equipment is inexpensive and will last you for many years.

You must know and abide by the NAR [Model Rocket](#) and [High Power Safety Codes](#). All NARTREK activities are based upon the NAR Safety Codes.

You must understand the [NAR rocket motor coding system](#).

## Try It Before You Buy It

To take advantage of our web-based "try it before you buy it" offer, download the [Bronze Level Packet](#)  now, and follow the instructions on the first page. You can preview our [Silver](#)  and [Gold Level Packets](#)  as well. (Packets are in PDF format and require the [free Adobe Acrobat Reader](#) to display.)

## How to Register by Mail

Otherwise, to receive your first NARTREK packet, send your name, address, NAR number, and a check payable to "NARTREK" for the proper amount to:

NARTREK Base  
[George Scheil](#)  
7311 Ditzler  
Raytown MO 64133

The by-mail fee for each achievement level packet is \$5 -- with the exception of the Gold level, which is \$10.

Special Offer: receive the Bronze, Silver, and Gold packets, plus one advanced level of your choice, for \$20.

As soon as your check arrives, your Bronze packet will be in the mail to you!

---

**Join NARTREK now,  
and wear the NARTREK Gold!**

---



**NOTE:** If you do not have a copy of Adobe Reader software, you can download it for FREE by clicking on the icon below.



[Return to the NAR home page](#) | [Join the NAR](#)

**Part IX Financial Data**

For purposes of this schedule, years in existence refer to completed tax years. If in existence 4 or more years, complete the schedule for the most recent 4 tax years. If in existence more than 1 year but less than 4 years, complete the statements for each year in existence and provide projections of your likely revenues and expenses based on a reasonable and good faith estimate of your future finances for a total of 3 years of financial information. If in existence less than 1 year, provide projections of your likely revenues and expenses for the current year and the 2 following years, based on a reasonable and good faith estimate of your future finances for a total of 3 years of financial information. (See instructions.)

**A. Statement of Revenues and Expenses**

	Type of revenue or expense	Current tax year	3 prior tax years or 2 succeeding tax years				(e) Provide Total for (a) through (d)
		(a) From ..... To .....	(b) From ..... To .....	(c) From ..... To .....	(d) From ..... To .....		
<b>Revenues</b>	<b>1</b> Gifts, grants, and contributions received (do not include unusual grants)						
	<b>2</b> Membership fees received						
	<b>3</b> Gross investment income						
	<b>4</b> Net unrelated business income						
	<b>5</b> Taxes levied for your benefit						
	<b>6</b> Value of services or facilities furnished by a governmental unit without charge (not including the value of services generally furnished to the public without charge)						
	<b>7</b> Any revenue not otherwise listed above or in lines 9–12 below (attach an itemized list)						
	<b>8</b> Total of lines 1 through 7						
	<b>9</b> Gross receipts from admissions, merchandise sold or services performed, or furnishing of facilities in any activity that is related to your exempt purposes (attach itemized list)						
	<b>10</b> Total of lines 8 and 9						
	<b>11</b> Net gain or loss on sale of capital assets (attach schedule and see instructions)						
	<b>12</b> <b>Unusual grants</b>						
<b>Expenses</b>	<b>13</b> Total Revenue Add lines 10 through 12						
	<b>14</b> Fundraising expenses						
	<b>15</b> Contributions, gifts, grants, and similar amounts paid out (attach an itemized list)						
	<b>16</b> Disbursements to or for the benefit of members (attach an itemized list)						
	<b>17</b> Compensation of officers, directors, and trustees						
	<b>18</b> Other salaries and wages						
	<b>19</b> Interest expense						
	<b>20</b> Occupancy (rent, utilities, etc.)						
	<b>21</b> Depreciation and depletion						
	<b>22</b> Professional fees						
	<b>23</b> Any expense not otherwise classified, such as program services (attach itemized list)						
	<b>24</b> Total Expenses Add lines 14 through 23						

**Part IX Financial Data** (Continued)**B. Balance Sheet (for your most recently completed tax year)**

Year End:

(Whole dollars)

Assets		
1	Cash . . . . .	1
2	Accounts receivable, net . . . . .	2
3	Inventories . . . . .	3
4	Bonds and notes receivable (attach an itemized list) . . . . .	4
5	Corporate stocks (attach an itemized list) . . . . .	5
6	Loans receivable (attach an itemized list) . . . . .	6
7	Other investments (attach an itemized list) . . . . .	7
8	Depreciable and depletable assets (attach an itemized list) . . . . .	8
9	Land . . . . .	9
10	Other assets (attach an itemized list) . . . . .	10
11	Total Assets (add lines 1 through 10) . . . . .	11
Liabilities		
12	Accounts payable . . . . .	12
13	Contributions, gifts, grants, etc. payable . . . . .	13
14	Mortgages and notes payable (attach an itemized list) . . . . .	14
15	Other liabilities (attach an itemized list) . . . . .	15
16	Total Liabilities (add lines 12 through 15) . . . . .	16
Fund Balances or Net Assets		
17	Total fund balances or net assets . . . . .	17
18	Total Liabilities and Fund Balances or Net Assets (add lines 16 and 17) . . . . .	18
19	Have there been any substantial changes in your assets or liabilities since the end of the period shown above? If "Yes," explain. <input type="checkbox"/> Yes <input type="checkbox"/> No	

**Part X Public Charity Status**

Part X is designed to classify you as an organization that is either a **private foundation** or a **public charity**. Public charity status is a more favorable tax status than private foundation status. If you are a private foundation, Part X is designed to further determine whether you are a **private operating foundation**. (See instructions.)

1a	Are you a private foundation? If "Yes," go to line 1b. If "No," go to line 5 and proceed as instructed. If you are unsure, see the instructions.	<input type="checkbox"/> Yes <input type="checkbox"/> No
b	As a private foundation, section 508(e) requires special provisions in your organizing document in addition to those that apply to all organizations described in section 501(c)(3). Check the box to confirm that your organizing document meets this requirement, whether by express provision or by reliance on operation of state law. Attach a statement that describes specifically where your organizing document meets this requirement, such as a reference to a particular article or section in your organizing document or by operation of state law. See the instructions, including Appendix B, for information about the special provisions that need to be contained in your organizing document. Go to line 2.	<input type="checkbox"/>
2	Are you a private operating foundation? To be a private operating foundation you must engage directly in the active conduct of charitable, religious, educational, and similar activities, as opposed to indirectly carrying out these activities by providing grants to individuals or other organizations. If "Yes," go to line 3. If "No," go to the signature section of Part XI.	<input type="checkbox"/> Yes <input type="checkbox"/> No
3	Have you existed for one or more years? If "Yes," attach financial information showing that you are a private operating foundation; go to the signature section of Part XI. If "No," continue to line 4.	<input type="checkbox"/> Yes <input type="checkbox"/> No
4	Have you attached either (1) an affidavit or opinion of counsel, (including a written affidavit or opinion from a certified public accountant or accounting firm with expertise regarding this tax law matter), that sets forth facts concerning your operations and support to demonstrate that you are likely to satisfy the requirements to be classified as a private operating foundation; or (2) a statement describing your proposed operations as a private operating foundation?	<input type="checkbox"/> Yes <input type="checkbox"/> No
5	If you answered "No" to line 1a, indicate the type of public charity status you are requesting by checking one of the choices below. You may check only one box.	
	The organization is not a private foundation because it is:	
a	509(a)(1) and 170(b)(1)(A)(i)—a church or a convention or association of churches. Complete and attach Schedule A.	<input type="checkbox"/>
b	509(a)(1) and 170(b)(1)(A)(ii)—a <b>school</b> . Complete and attach Schedule B.	<input type="checkbox"/>
c	509(a)(1) and 170(b)(1)(A)(iii)—a <b>hospital</b> , a cooperative hospital service organization, or a medical research organization operated in conjunction with a hospital. Complete and attach Schedule C.	<input type="checkbox"/>
d	509(a)(3)—an organization supporting either one or more organizations described in line 5a through c, f, g, or h or a publicly supported section 501(c)(4), (5), or (6) organization. Complete and attach Schedule D.	<input type="checkbox"/>

	2009	2010	2011	2012
<b>Insurance</b>				
Operations (Launch, etc) Insurance - Liability for Ops			\$500	\$1,000
<b>Website (Mach30.org)</b>				
- Wordpress Domain Mapping			\$12	\$12
<b>Other</b>				
Business Cards			\$100	\$100
Incorporation/ paperwork fees	\$125	\$500	\$100	
<b>Virtual Infrastrucutre</b>				
ODE Hosting			\$192	\$192
ODE Domains (.net, .org, .com) good through 4/2/12			\$37	\$37
ODE SSL Cert			\$150	\$150
ODE development support			\$1,000	\$1,000
ODE marketing expenses			\$250	\$250
ITAR consulting			\$0	\$2,000
<b>Community Building</b>				
Education/ training events			\$0	\$300
"Kites" Project Crew Gifts			\$200	\$200
<b>Documentation</b>				
Videography/Photography/Production			\$0	\$1,000
<b>Total</b>	<b>\$125</b>	<b>\$500</b>	<b>\$2,541</b>	<b>\$6,241</b>



[illegible]

# Mach 30 Foundation for Space Development

## Open Source Spaceflight Hardware Grant Application

### Guidelines:

The mission of Mach 30 is to hasten the advancement of humanity into a spacefaring civilization. One of the primary methods used to support this mission is the development of open source spaceflight hardware. Mach 30 makes available funds to support open source spaceflight hardware projects developed by volunteers when those projects are aligned with the current research goals of Mach 30, and the projects have demonstrated a sufficient level of research, planning, and development. Any project wishing to apply for a grant from Mach 30 must already have an established presence online at Open Design Engine (ODE - <https://opendesignengine.net/>) or a similar website, be licensed under the Mach 30 Open Design Pledge (<http://mach30.org/about/mach-30-open-design-pledge/>) or similar license, and clearly document the research, planning, and development done to date.

Please note, Mach 30 Open Source Spaceflight Hardware Grants are intended to cover “kite” level research (<http://mach30.org/2009/11/02/innovation-and-kites-stepping-stone-to-aurora/>). As such, grant applicants should either apply for funding at the first level (~\$200) or demonstrate in their application the mastery, and openly licensed designs and documentation, of earlier levels.

**Project Name:** \_\_\_\_\_

**Project URL (on ODE or similar system):** \_\_\_\_\_

**Team name (optional):** \_\_\_\_\_

**Primary Contact:** \_\_\_\_\_

**Contact info** (address, phone number(s), e-mail address):

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### Other Team members:

Name:

Email:

Phone:

_____	_____	_____
_____	_____	_____
_____	_____	_____

**Describe the project** (What are the goals and requirements?):

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**State your motivation for the project** (Why are you doing it?):

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**Give a rough outline of the project** (How do you plan to accomplish this project?):

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**Budget** (breakdown or narrative):

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**Agreement details: (please initial to affirm)**

\_\_\_\_\_ I understand that Mach 30 is a non-profit 501(c)3 corporation, and the use of Mach 30 funds must comply with IRS regulations.

\_\_\_\_\_ I agree to use this grant in the manner described in this form.

\_\_\_\_\_ I agree to licence this project in the Manner designated by Mach 30.

\_\_\_\_\_ I agree that the project will be hosted at OpenDesignEngine.net (ODE)

\_\_\_\_\_ I agree to frequently document the project progress using pictures and video, and

to make this documentation available to Mach 30.

\_\_\_\_\_ Upon completion of the project, I will provide a project summary that includes but is not limited to: team feedback, lessons learned, surprising outcomes, and pretty pictures.

By signing this form...

x \_\_\_\_\_  
signature date

By signing this form, Mach 30 hereby authorizes the disposition of funds to the named project.

x \_\_\_\_\_  
signature date

# CERN OPEN HARDWARE LICENCE v1.1

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## Preamble

Through this CERN Open Hardware Licence ("CERN OHL") version 1.1, the Organization wishes to disseminate its hardware designs (as published on <http://www.ohwr.org/>) as widely as possible, and generally to foster collaboration among public research hardware designers.

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Version 2.0, January 2004

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# OSHW

## From Definition of Free Cultural Works

This page hosts the current proposed Open Source Hardware (OSHW) Statement of Principles and Definition v1.0. The statement of principles is a high-level overview of the ideals of open-source hardware. The definition is an attempt to apply those ideals to a standard by which to evaluate licenses for hardware designs.

To endorse the Open Source Hardware Definition 1.0, please add your name (and affiliation) below (<http://freedomdefined.org/OSHW#Endorsements>)

Older drafts of the definition are also available ([http://freedomdefined.org/OSHW\\_older\\_drafts](http://freedomdefined.org/OSHW_older_drafts)) .

Compiled community feedback from previous versions of the Definition can be found here (<http://www.openhardwaresummit.org/compiled-feedback/>)

If you would like to propose changes to the statement of principles or definition, please do so on the work-in-progress draft ([http://freedomdefined.org/OSHW\\_draft](http://freedomdefined.org/OSHW_draft)) . And, please edit while signed in, not anonymously.

*Please join the conversation about the definition here (<http://openhardwaresummit.org/forum>)*

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## Open Source Hardware (OSHW) Statement of Principles 1.0

Open source hardware is hardware whose design is made publicly available so that anyone can study, modify, distribute, make, and sell the design or hardware based on that design. The hardware's source, the design from which it is made, is available in the preferred format for making modifications to it. Ideally, open source hardware uses readily-available components and materials, standard processes, open infrastructure, unrestricted content, and open-source design tools to maximize the ability of individuals to make and use hardware. Open source hardware gives people the freedom to control their technology while sharing knowledge and encouraging commerce through the open exchange of designs.

## Open Source Hardware (OSHW) Definition 1.0

*OSHW Draft Definition 1.0 is based on the Open Source Definition (<http://opensource.org/docs/osd>) for*

*Open Source Software and draft OSHW definition 0.5 ([http://freedomdefined.org/OSHW\\_older\\_drafts](http://freedomdefined.org/OSHW_older_drafts)) . The definition is derived from the Open Source Definition (<http://www.opensource.org/docs/osd>) , which was created by Bruce Perens and the Debian developers as the Debian Free Software Guidelines. Videos and Documentation of the Opening Hardware workshop which kicked off the below definition are available here (<http://www.eyeball.org/projects/Opening-hardware>) . Please join the conversation about the definition here (<http://openhwaresummit.org/forum>)*

## **Introduction**

Open Source Hardware (OSHW) is a term for tangible artifacts -- machines, devices, or other physical things -- whose design has been released to the public in such a way that anyone can make, modify, distribute, and use those things. This definition is intended to help provide guidelines for the development and evaluation of licenses for Open Source Hardware.

Hardware is different from software in that physical resources must always be committed for the creation of physical goods. Accordingly, persons or companies producing items ("products") under an OSHW license have an obligation to make it clear that such products are not manufactured, sold, warrantied, or otherwise sanctioned by the original designer and also not to make use of any trademarks owned by the original designer.

The distribution terms of Open Source Hardware must comply with the following criteria:

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The hardware must be released with documentation including design files, and must allow modification and distribution of the design files. Where documentation is not furnished with the physical product, there must be a well-publicized means of obtaining this documentation for no more than a reasonable reproduction cost, preferably downloading via the Internet without charge. The documentation must include design files in the preferred format for making changes, for example the native file format of a CAD program. Deliberately obfuscated design files are not allowed. Intermediate forms analogous to compiled computer code -- such as printer-ready copper artwork from a CAD program -- are not allowed as substitutes. The license may require that the design files are provided in fully-documented, open format(s).

### **2. Scope**

The documentation for the hardware must clearly specify what portion of the design, if not all, is being released under the license.

### **3. Necessary Software**

If the licensed design requires software, embedded or otherwise, to operate properly and fulfill its essential functions, then the license may require that one of the following conditions are met:

- a) The interfaces are sufficiently documented such that it could reasonably be considered straightforward to write open source software that allows the device to operate properly and fulfill its essential functions. For example, this may include the use of detailed signal timing diagrams or pseudocode to clearly illustrate the interface in operation.
- b) The necessary software is released under an OSI (<http://www.opensource.org/>) -approved open source license.

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The license must not discriminate against any person or group of persons.

## **8. No Discrimination Against Fields of Endeavor**

The license must not restrict anyone from making use of the work (including manufactured hardware) in a specific field of endeavor. For example, it must not restrict the hardware from being used in a business, or from being used in nuclear research.

## **9. Distribution of License**

The rights granted by the license must apply to all to whom the work is redistributed without the need for execution of an additional license by those parties.

## **10. License Must Not Be Specific to a Product**

The rights granted by the license must not depend on the licensed work being part of a particular product. If a portion is extracted from a work and used or distributed within the terms of the license, all parties to whom that work is redistributed should have the same rights as those that are granted for the original work.

## **11. License Must Not Restrict Other Hardware or Software**

The license must not place restrictions on other items that are aggregated with the licensed work but not derivative of it. For example, the license must not insist that all other hardware sold with the licensed item be open source, nor that only open source software be used external to the device.

## **12. License Must Be Technology-Neutral**

No provision of the license may be predicated on any individual technology, specific part or component, material, or style of interface or use thereof.

## Afterword

The signatories of this Open Source Hardware definition recognize that the open source movement represents only one way of sharing information. We encourage and support all forms of openness and collaboration, whether or not they fit this definition.

## Licenses and Hardware

In promoting Open Hardware, it is important to make is clear to designers the extent to which their licenses actually can control their designs. Under U.S. law, and law in many other places, copyright does not apply to electronic designs. Patents do. The result is that an Open Hardware license can in general be used to restrict the *plans* but *not* the manufactured devices or even restatements of the same design that are not textual copies of the original. The applicable section of copyright law is 17.102(b), which says:

*In no case does copyright protection for an original work of authorship extend to any idea, procedure, process, system, method of operation, concept, principle, or discovery, regardless of the form in which it is described, explained, illustrated, or embodied in such work.*

## Translations

The below translations have been offered by members of the community and should be checked for accuracy and possible language problems.

- Portuguese (<http://freedomdefined.org/OSHW/translations/portuguese>)
- Spanish (<http://freedomdefined.org/OSHW/translations/spanish>)
- Japanese (<http://freedomdefined.org/OSHW/translations/japanese>)
- French (<http://freedomdefined.org/OSHW/translations/french>)

## Endorsements

OSHW Draft Definition 1.0 has been endorsed by the following persons and/or organization as of 2011/7/12.

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# Mach 30 Open Design Pledge

## DRAFT - v0.1

### Preface

*This pledge is a distillation of several sources of material. The most recent of which is [John Wilbanks' presentation](#) (video [here](#) and starts at 8:30 in). In his presentation, John Wilbanks makes three important points about openly licensing hardware. First, "[open source hardware](#)" is a [commons](#), but maybe the not kind we think. Instead of one commons, it is really a set of commons. Second, as a result of this view, openly licensing hardware is not as straight forward as software, and maybe the answer is to focus on [norms](#) instead of licensing, and use the licenses that are available already where applicable. To that end, this pledge is a statement of the norms and application of licenses for Mach 30 projects. Lastly, all new licenses in the open hardware arena are like "uncompiled code" until tested in the courts, so it is difficult to tell what will actually work in terms of licensing open hardware.*

#### 1. Introduction

The intellectual property rights involved in licensing [open design hardware](#), also called [open source hardware and open hardware](#), are complex and cross many legal boundaries. Most physical products developed today involve embedded and/or companion software, and include documentation. These are all examples of copyrighted works, the licensing of which are well covered by existing open source software licenses and the Creative Commons. Then there is the question of patents and inventions, which require registration with government agencies and involve permission to make, use, and sell products. Instead of attempting to develop a single license that captures all of these complications, Mach 30 instead makes this pledge, with specific implementation details below: In order to promote open sharing of the design of its hardware projects, Mach 30 will license all material related to hardware projects it creates under open licenses, asking only for attribution in return, without limits on the making, using, or selling of that hardware.

#### 2. Disclaimer of Warranty and Limitation of Liability

Mach 30, and its contributors, provide all materials related to Mach 30 hardware projects As-Is and make no warranty, expressed or implied, about the hardware or its software or its documentation, per the licenses specified below. Similarly, Mach 30, and its contributors, are not liable for any damages related to the use or misuse of Mach 30 hardware projects per the licenses specified below.

#### 3. Permission to make, use, and sell

Permission is granted to all users to make, use, or sell the hardware developed by Mach 30.

#### 4. Software

HELP SUPPORT THE OPEN SOURCE  
SPACEFLIGHT REVOLUTION!



### KEEP IN TOUCH!

The first step toward getting involved with Mach 30 is to get on the e-mail list. We'll send you a monthlyish newsletter about what's happening and updates about volunteer opportunities. We will not spam you, or give your address to other people who might spam you [Sign up here](#)

### SIMILAR ORGANIZATIONS

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[CSTART](#)  
[DevelopSpace](#)  
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#### 6. All Other Material

All other material developed in support of Mach 30 hardware projects is released to the [Public Domain](#). This includes, but is not limited to patentable inventions and test data.

#### 7. Request for attribution

The selection of licenses associated with Mach 30 projects is intended to ensure that proper attribution is given to Mach 30 for the development of its hardware projects. Mach 30 requests, but recognizes it cannot enforce, similar attribution for the materials it submits to the Public Domain.

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The nature of the work of Mach 30, and its relationship to spaceflight, means that many of Mach 30's hardware projects will fall under the jurisdiction of [ITAR](#) and other export restrictions. As long as this remains true, when material is ITAR/Export restricted, this pledge is limited to sharing material within those restrictions.

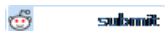
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Wednesday, July 20

Sunday, August 14

3:00pm Monthly Board Meeting

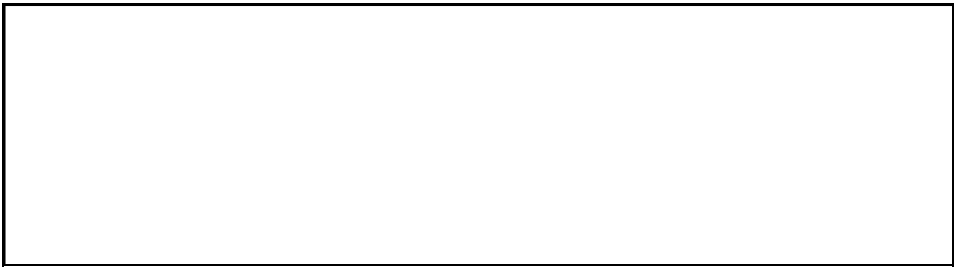
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3:00pm Monthly Board Meeting

Showing events until 9/30.

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Events shown in time zone: Eastern Time



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# The TAPR Open Hardware License

Version 1.0 (May 25, 2007)

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## PREAMBLE

Open Hardware is a thing – a physical artifact, either electrical or mechanical – whose design information is available to, and usable by, the public in a way that allows anyone to make, modify, distribute, and use that thing. In this preface, design information is called “documentation” and things created from it are called “products.”

The TAPR Open Hardware License (“OHL”) agreement provides a legal framework for Open Hardware projects. It may be used for any kind of product, be it a hammer or a computer motherboard, and is TAPR's contribution to the community; anyone may use the OHL for their Open Hardware project. You are free to copy and use this document provided only that you do not change it.

Like the GNU General Public License, the OHL is designed to guarantee your freedom to share and to create. It forbids anyone who receives rights under the OHL to deny any other licensee those same rights to copy, modify, and distribute documentation, and to make, use and distribute products based on that documentation.

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