1.1 Foreword from the Founder

"Hi my name is Marcin - founder of Open Source Ecology.

Today, we are proud to share the full documentation of our first 4 tools in the Global Village Construction Set -- the tools of construction. We're publishing everything that you'll need to build yourself - an automated Compressed Earth Brick Press, Multipurpose Tractor, Soil Pulverizer, and Hydraulic Power Unit. We are also including initial testing data from CEB construction in 2011.

Full plans are now complete and available for the 4 machines - in beta release - suggested for use by developers and makers. These now await the thousands of hours of field testing necessary for general adoption by the rest of the world. So please join us as early adopters - and do your part - to demonstrate the power of open source hardware.
Let's build open source. Let's build - civilization.

Merry Christmas 2011 - this is our Christmas Gift to the World."

-Marcin

1.2 What is Open Source Ecology?

The Open Source Ecology Paradigm
Marcin Jakubowski, Ph.D., 12.24.2011

Introduction

The Open Source Ecology Paradigm is an idea that the open source economy is a route to human prosperity in harmony with natural life support systems.

Open Source Ecology (OSE) is a movement to create the open source economy. The movement consists of hundreds of entrepreneurs, producers, engineers, makers, and supporters around the world – who believe in the power of open – who share the open ethic. The 'Ecology' in the name refers to the interaction of natural and human ecosystems – the environmental, societal, and technological systems – as they interact along open principles. Read a further description of the OSE concept as it was formulated initially in 2003 (see Appendix below). Since then, the concept has evolved to a platform for creating distributive enterprise, as a solid foundation for a sound economy - a third economic option beyond capitalism or socialism. The distributive economy paradigm centers around open access to efficient production as a means to transcend artificial material scarcity. The paradigm uses open source tools and techniques to produce advanced civilization – by unleashing the power of the responsible use of technology.

The main current project of OSE is the Global Village Construction Set – a set of 50 Industrial Machines that allow for the creation of a small scale civilization with modern comforts.

OSE Mission

The mission of Open Source Ecology is to create an open source economy - an economy that optimizes both production and distribution, while providing environmental regeneration and social justice.

Overview of the OSE Paradigm

The backbone of Open Source Ecology is open access to economically-significant information – product designs, techniques, and rapid learning materials for achieving this. Collaborative development, 24/7 around the globe, leads to best practice designs - accessible openly via the internet. When economic productivity is unleashed as such, there is a direct effect on community prosperity. As a result of lowered barriers to entry, each community can increase the range of products and services that it can provide. Global collaboration in open product and process design leads to best practices being commonly available. This is opposed to the dominant paradigm of today – where a few companies having the best products or monopoly control, and by definition, the rest is mediocre. Open economic development has the potential to raise the bar on the quality of products in the productive economy – as opposed to the enforcement of mediocrity through

protectionism and monopoly.

All wealth comes from nature – rocks, plants, sunlight, and water. These are found ubiquitously. Yet the presence of strategic resources results in conflicts over their appropriation. "Hey, that's my oil under your land." Open source technology can address this problem – via principles of substitutability. There are many routes to producing any economically significant product or service. Resilience of communities depends on having a diversity of options. As open access to technology becomes commonplace, every community can increase its level of productivity and appropriate technology – to the point that it can substitute any strategic material with local options – without any reduction in the standard of living – while contributing positively to global peace.

Transparency of the connection between technology and nature means that people begin to respect nature. This happens when people begin to respect that their well-being comes from nature. This transparency is facilitated when economically productive activities happen as close to the community as possible – not out of sight, out of mind in remote locations. This is true environmental accountability – as one tends to not destroy their own environment. Thus, there is a direct connection between transparency of production to natural regeneration – as people begin to make more sound production choices – by understanding the connection of production to the land. This means that industry no longer needs to occur in the form of toxic wastelands – but instead – eco-industry, on a human scale – serving the needs of people, not centralized industries competing for world domination.

Thus, technology and technological literacy are a way to reconnect to nature – not to destroy it.

The above depends on increasing the density of knowhow and technology in every community – which comes from the open paradigm – open information, open communication, and open everything. The limit of optimal density of productive knowhow is the point that any community is capable of producing the full range of essential resources necessary for it to exist, grow, and prosper. This is not to say that trade should not happen – but for community stability – trade should be avoided on essential products that the community needs. As much as a community would want otherwise – when placed in a scarcity condition – rationality goes out the window and people start to kill each other.

For the first time in history – we have a chance to do otherwise. Unleashed access to information and technology – as availed by the computer age – means that any conflicts related to material scarcity can become a thing of the past. This includes resource conflicts, poverty, overpopulation, and even bureaucracy – as bureaucracy is not much more than a mechanism to manage scarce resources. Further, regulatory costs are minimized via technological transparency - as a technologically-literate populace of the open source age becomes increasingly responsible for its own actions.

This is not a case for conflict between the rich and poor, the city or the country, the first or third worlds – it is a case where open access to information helps everyone. As barriers to entry are lowered, social upheaval is minimized. As production remains high – and increases due to the

elimination of competitive waste – prosperity can only increase.

This is a paradigm shift. That is the core of Open Source Ecology.

This does not address evolving as humans – in cultural and scientific advancement - or in wisdom that prevents us from reverting to insanity. Open Source Ecology only lays a starting point and foundation - from which evolution becomes possible.

Open

We support everything open. See the notions of open at the Shuttleworth Foundation - *http://www.shuttleworthfoundation.org/about-us/our-philosophy/communication/*

Economy and Ecology

Distributive Enterprise - The distinguishing feature of this paradigm is a focus on distributive enterprise – open publishing of not only product designs, but also of open enterprise models so that others can replicate best practices. There is a direct relationship between open design and lowering of barriers to entry. Productive enterprise forms the backbone for communities' infrastructures and their prosperity. Open access to unprecedented high densities of productive information means economic prosperity – and everybody wins.

The open source economy is an economic system marked by open access to best-practice designs and techniques for producing economically-significant products and services. One feature of the open source economy is Industry 2.0 – or distributed, flexible production – where access to a down-loadable repository of open source design feeds local, multipurpose digital fabrication facilities. Such facilities - or powerful Microfactories - can produce just about anything that a community will need - local food, energy, housing, or cars. This is distinct from centralized production facilities that exist today.

An open source economy produces designs by global collaboration, with development cycles 24/7 around the globe. When a sufficient number of stakeholders join a development process, it is a matter of time before the development cycle yields the best designs – and these designs evolve continuously.

Integrated Economy – open fosters rapid learning (open IP) and low capitalization (open source products) – i.e., lower barriers to entry. Lower barriers to entry indicate that a single economic agent can have a broader range of productivity, therefore more resilience from economic shocks. In the limit of extreme diversity on the part of the producers, every community can attain a complete economy. If product evolution involves advanced techniques for material substitution, then every community can attain a complete economy based on local resources. This is the solution to resource conflicts. This is stability in the face of global economic upheaval.

The end of artificial material scarcity – Artificial material scarcity may be defined as the condition where – in the absolute abundance of resources – namely rocks, plants, water, and sunlight –

the distribution to humans is drastically uneven. Lowering barriers to entry helps to distribute production more widely. Product optimization from open development includes optimization for lifetime of use. Lifetime design (i.e., lower maintenance costs), combined with high productivity and low barriers to entry - indicates that material abundance can be the general human condition. This is a solution to poverty.

Transparency of Resource Use and Feedback – Rapid learning in the open source economy helps people gain numeracy and technological literacy. Technological literacy promotes the understanding of production – and specifically, the relationship between natural resources and human population. Local resource use fosters a high level of resource feedback loops – as the state of the local environment is easily observable. Such transparency of resource use is the solution to overpopulation in a rational (materially abundant) society.

Lower Cost – by eliminating competitive waste, the cost of buying or making open source products is reduced significantly.

Competitiveness with Globalization - When IP access barriers are eliminated in the open source economy, cost of production is reduced to production capitalization and labor. The cost of production capitalization, under the assumption of flexible fabrication assisted by automation - goes to zero in the scenario of community-supported manufacturing (think Open Source Fab Lab in every community). In the open economy of DIY ethics and local capacity and transparency - the cost of labor goes down – as the user can also learn to be the producer. In the limit of DIY ethic, this cost, defined as cost of external labor - goes to zero – and is replaced by one's time. Further, in the limit of lifetime-design products, the time required for production is minimized, as production has to happen only once. Thus, competitiveness with globalization is achieved by zero access barriers and local skill, and local social capital – a different paradigm.

Ecology

Closing the Nature-Technology Divide – Truly sound technology is not at odds with nature. We have a choice to produce technology in an environmentally sound way. For just about every harmful and polluting industrial process, a clean alternative may be found. Biomimicry shows us the way to do this in many cases. Moreover, truly sound technology should bring us closer to nature - i.e., if we appreciate that nature provides all material wealth, we are inclined to take care of nature. This is a case for educating generalists – not technologists or environmentalists – people who understand technology deeply to the point that they respect nature – and people who understand the environment deeply to the point that they respect technology. Technological literacy is facilitated by introduction of true technical education, as opposed to industry standard marketing forces.

Product Development Ecology – In the mainstream, the designer is not the draftsman, the draftsman is not the engineer, the engineer is not the fabricator, the fabricator is not the user, and the user is not the repairman. While is touted as the pinnacle of specialization, this introduces a lack of accountability between all these steps, and therefore, inferior product design when considered from the human ergonomic factors, product service, environmental issues, or wealth

distribution issues. Open source design addresses this, as it is design by the people, for the people – and it is infinitely customizable.

Environmental Regeneration – There is a direct link between open source technology and environmental integrity. Open technology implies optimal technology – and one part of optimization is optimization for environmental friendliness. Thus, the trend of environmental degradation can be reversed to regeneration.

Appendix

Archived on February 10, 2005, see Mission at -
http://web.archive.org/web/20050210084651/http://sourceopen.org/Ca

Our Mission
By Marcin Jakubowski, 11.30.03

I. What is Open Source?

Open Source refers to the model of providing goods and services which includes the possibility of the end-user's participation in the production of these goods and services. This concept has already been demonstrated in Linux, the open source computing system. With Linux, a large number of software developers have contributed to creating a viable alternative to the proprietary Windows computer operating system. Many people can readily see the advantages- all Linux software is free. Please read these articles on the concept of Open Source software and its implications for changing business.

II. What is Open Source Economics?

Our mission is to extend the Open Source model to the provision any goods and services- Open Source Economics. This means opening access to the information and technology which enables a different economic system to be realized, one based on the integration of natural ecology, social ecology, and industrial ecology. This economic system is based on open access- based on widely accessible information and associated access to productive capital- distributed into the hands of an increased number of people. Read about an inspiring example of such an economic model being currently put into practice with respect to manufacturing vehicles.

We believe that a highly distributed, increasingly participatory model of production is the core of a democratic society, where stability is established naturally by the balance of human activity with sustainable extraction of natural resources. This is the opposite of the current mainstream of centralized economies, which have a structurally built-in tendency towards of overproduction.

III. What is Open Source Ecology?

We derive our organization's name from a concept which refers to the integration of the natural, societal, and industrial ecologies- Open Source Ecology- aiming at sustainable and regenerative economics. We are convinced that a possibility of a quality life exists, where human needs are guaranteed to the world's entire population- as long as we ask ourselves basic questions on what societal structures and productive activities are truly appropriate to meeting human needs for all. At the end of the day, the goal is to liberate our time to engage in exactly that which each of us wants to be doing- instead of what we need to do to survive. All have the potential to thrive. Today, an increasingly smaller percentage of the world's population is in this position.

1.3 Global Village Construction Set: Rollout Plan

Tactical Approach

To create an open source economy, we are starting with a small but sufficient subset, the GVCS 50. By developing the GVCS technology kernel, we enable the community-based solution of relocalized production. Because the GVCS tools are selected based on their large economic significance, this has widespread applications – such as enterprise startup, regeneration of urban decay, and building of communities – both in the developed and developing world. Because the GVCS is comprehensive, it is designed to provide a robust solution for rebuilding communities from the ground up.

We currently have $1/2M of funding to begin rapid parallel development of the GVCS, with development of 14 further tools starting January 1, 2012. We aim to produce beta product releases of most of these tools by April 1, 2012. From then, we will deploy the remaining 32 technologies, while documenting all results with global CAD and instructionals support. Our goal is to secure a total of $5.5M for 2012 by January 31, 2012. We are including $2.5M for prototyping, $2.5M for documentation and field testing, and $1/2M for deploying the fully-featured, open source CAD/CAM solution. See OSE Enterprise Plan video.

We have grown from about $20k/year for the past 4 years to $500k in the last 2 months, and we have the ambitious goal of $5M more secured within one month. We pride ourselves in efficiency of resource allocations. We spend about 98% of our resources directly on prototypes built, and our overhead for the nonprofit sector donations is 2% via a fiscal sponsor. We encourage you to donate and to put your energy into this work. We are doing a lot of the development with volunteers, and Factor e Farm is the main development facility. We are also outsourcing as much of the design, prototyping, and documentation work as possible – as funding allows. Increased resources mean increased burn-down rate for the GVCS 50 technologies.

The next 14 tools are:

CNC Multimachine – we are currently considering Dan Granett, a precision machining expert – to build out the CNC Multimachine, while utilizing any relevant techniques from a collaborating group - the Open Source Multimchine project

CNC Circuit Mill – Yoonseo Kang is the project lead on this at Factor e Farm, and we are considering the Snap Lock CNC as our platform of choice, evaluating it at present before starting deployment in January. Proposal Brief is forthcoming.

Ironworker Machine – Brianna Kufa is project lead, with initial design work completed, and Proposal Brief forthcoming. We currently have a design challenge up on GrabCAD to develop an open source cutting blade design.

CNC Torch Table – prototype I has been tested in producing tractor parts with success, and optimization is needed for the software tool-chain. We are currently considering an upgraded gantry shown under Prototype II on the wiki, a simple DIY design which has seen many hundreds of hours of production time and is a stable design. Z height control needs to be developed.

Induction Furnace – conceptual design done. Considering recruiting consulting assistance from Superior Induction. Looking for subject matter experts to join this project, Dedicated Project Visit or remote collaboration.

Sawmill – Prototype I 75% complete, ready for motor and blade attachment; looking for Dedicated Project Visitor for field testing.

Backhoe – Enniss Inc. is being considered for prototyping.

Bulldozer – considering modified LifeTrac frame and weights, jack shaft wheel drive and steel wheels like in old agricultural traction engines from 100 years ago; 10,000 lb. weight for first prototype.

Well-drilling rig – considering design consulting from Enniss, Inc. Looking for subject matter experts.

Modern Steam Engine – current plan is to use the Wally Munster scalable modern design. Collaboration with Tom Kimmel of Steam Auto Club of America to develop a plant for the next generation of modern steam Power Cubes, about 4x3x3 feet in size for s 25 hp Prototype 1. Plant includes Gasifier Burner, Heat Exchanger, oil pump, water pump. Plan for Heat Exchanger is to work with Tom using his open source coil winder.

Gasifier Burner – Larry Dobson is completing plans for an advanced gasifier burner with heat exchanger for heating water. Plans will be completed on January 31, 2011.
Pelletizer – Need design and fabrication drawings. Can be fabricated by Sweiger Shop readily. See pelletizer dies on research and development page - and design around those.

Power Inverter – following the development of the CNC circuit mill, we will prototype the inverter. Need power electronics subject matter experts to join the team.

Solar Concentrator – the current plan is to build on documentation available from the SolarFire project. Collaborating with Dr. Peter Schwartz of Cal Poly on design evaluation.

1.4 Getting Involved: So, you want to build a new civilization?

<u>Getting Involved</u>

We aim to make this one of the most collaborative projects in the world, and we aim to train movement entrepreneurs dedicated to developing distributive enterprise.

So, You Want to Build a New Civilization?

All right. Please go to the OSE Wiki and sign in. You will see a list of the 50 GVCS technologies, There is plenty of work left on the GVCS 50. Pick one, and start contributing information. There is research and development, where you can contribute conceptual design, analysis of industry standards, diagrams, prior art, background research, and other supporting information. Then comes the design stage – CAD, calculations, simulations, CAE analysis, fabrication drawings, etc. Peer review is useful. Then comes the build – which requires a bill of materials. sourcing, and a facility to build. We encourage you to work remotely and contribute test data. We invite you to write a Proposal Brief, and we can fund your work upon technical merit. Or you can come for a Dedicated Project Visit to Factor e Farm.

The first step you should take when you get involved is to fill out the Team Culturing Survey. This helps to provide transparency and to introduce you to the rest of the global team. The beauty of the project is that collaborative development is beginning to take place 24/7 around the world. We should also develop a better human resources platform – where people are listed by their skills and contributions, promises and delivered products – so it becomes transparent who is doing work and fulfilling on their promises. This applies to volunteers and paid people.

How do you know what are the current priorities? First, see the Wiki, and the basic approach is - "If it is not on the wiki, it doesn't exist." From this point, you have to analyze the state of development critically. If it is not clearly documented on the wiki, it is probably in development or untested. Click on any device at the 50 GVCS technologies page. Ask yourself: Is there a project leader? What preliminary research has been done? Does full CAD exist? Are full fabrication procedures documented? Does a complete PDF of plans exist that you can take to your local fabricator? Does economic analysis exist so you can start your own enterprise? If not, those are to be completed – and it is a chance for you to get involved.

Current project leaders as of 12/25/11 include:

Yoonseo Kang – CNC Circuit Mill, Inverter component of the Universal Power Supply
Brianna Kufa – Ironworker Machine
Mark Norton – Modern Steam Engine
Larry Dobson – Gasifier Burner and Heat Exchanger
James Slade, Mike Apostol – CEB Press, LifeTrac
Tom Griffing – Power Cube

Marcin Jakubowski – CNC Torch Table, Induction Furnace
Aaron Makaruk – Resource Development
Mike Apostol – OS CAD/CAM solution

Contact these leaders on the latest progress.

The wiki is a huge sandbox, and the magic of it is that over time, even with many random contributions, editors organize content into a more cohesive form. The basic product template for each of the technologies at the GVCS 50 page contains general headings. You can search for information on the wiki, and if you find something relevant to one of the headings, you can edit to put the content at the right place.

Is a technology of your choice not part of the official 50 GVCS list? Then start new pages on the wiki for non-GVCS tools. The wiki is infinitely expandable. The GVCS is only a limited but sufficient set – limited so it remains a tractable project with a clear deliverable. We don't really know if the choices made are the best – but we will reevaluate after the set is done by year-end 2012. We can't tell until we see all the devices work together as a complete set. We just selected the 50 best ones according to OSE Specifications and the Product Selection Metric almost 4 years ago.

If you are a subject matter expert, designer, video editor, CAD draftsman, or other technical contributor in any of the 50 technologies – you are welcome to bid on work. We suggest you submit a Proposal Brief. The key to the project is finding qualified people – and we found that word of mouth and references from trusted sources tend to provide best results. Help us find these people.

We are also looking for full time people to join Factor e Farm – master builder, farmer, fabrication manager, CEO, CTO, and co-founder. With the farmer - we need to continue field testing the equipment while feeding our team. With the builder, we want to continue building out infrastructure, building out our electrical grid. With the fabrication manager, we want to continue production runs as a first-hand test of our economic significance, and to continue building the tools that we use on site. We are looking for startup instigators, not employees – as this type of risk-sharing is part of the responsibility that we seek in our partners.

There are other support roles. We also welcome you to join us in resource development – the OSE Enterprise is an open business plan that you can use. We are working on developing remote video editing capacity, where you can edit remotely after downloading footage from our repository – such as YouTube. Our current plant is to use smartphones for constant uploads of content – indexed by topic. Then, remote editors can take the content to make quality videos from the raw footage. We are also looking for ongoing CAD, fabrication drawing, simulation, and analysis support for prototyping.

At best, as the team grows at Factor e Farm, remote support functions would include:

video editing support – ongoing instructionals

CAD support – converting videos with measurements into CAD files;

Fabrication drawings support – converting CAD files into fabrication drawings that one can take to a local fabricator

CAE support – converting CAD files into CAE analysis for structural, thermal and other properties;

modeling support – animations modeling the function of machines, as part of explanatory

material blogging support – keeping track of a project with the project lead to provide regular

blog updates on a given project – such as checking in ½ hour each week by phone and writing a blog post. Strong journalism/reporting/creative writing skills are required to provide context and to pique the reader's interest. This is critical as we have a regular backlog of reporting from Factor e Farm and other locations.

collaboration support – dedicated searching for allied efforts, collaborators, peer reviewers, funding support, bidders, subject matter experts, and any other support that media and music repository support – keeping a repository of high resolution media, graphics, diagrams, and other materials for use in press releases, reports, and other publications; open source soundtrack repository for videos

Nonprofit fundraising – join Aaron Makaruk in raising funds for OSE. See his sample contract.

OSE Branches and Allied Efforts

There are 3 main forms of OSE-related operations: independent OSE efforts, chartered OSE organizations, and certified OSE/GVCS Producers

Independent OSE Efforts

OSE is a movement to create an open source economy by developing and using economically significant, open source information (open product and process design and techniques of production). OSE refers to more than just an open source economy. The distinction is that OSE produces not only open design, but also produces distributive enterprise as the means to affect the economic process. On top of this, it connects to environmental regeneration and social justice as discussed at the OSE Paradigm section.

We encourage that the OSE message be spread far and wide as the third economic paradigm. To this end, we do not restrict anybody from using the OSE name as long as they are following the OSE Paradigm. Others are welcome to use the official OSE name or official logo in branding their work or group as an independent OSE effort, without explicit permission, if they are an individual, group, or organization. Independent OSE Efforts are intended to promote that work of OSE, while

not demanding that any resources on the part of OSE International.

To be an independent OSE effort in good standing – the effort may be one or more of the following:

A user of GVCS technologies
Doing outreach about the OSE Paradigm
Developer or prototyper of GVCS technologies
Engaging in the development of any other, non-GVCS technologies while publishing designs and open business models. We believe in open everything, and the wiki is infinitely expandable. We recommend that you publish on the OSE Wiki for recognition.
An effort for raising money (nonprofit sector or otherwise) by using the OSE brand. In the case that you are raising money, we request that if you use the OSE brand, that you contribute 25% of your net funding raised to promote the work of OSE International. This money will be used directly for GVCS prototyping in 2012, so your funding will help the entire movement to achieve its goals faster.

While others are allowed to use the GVCS designs for profit - they are not allowed to use the official OSE logo to brand their products. They are welcome to sell products under their own label. If one wants to sell products under the official OSE/GVCS label, then one is required to become a certified OSE/GVCS producer, as discussed below.

If you are using the OSE identity to run some form of operation or effort, please let the greater community know as a matter of courtesy, by posting your organization's name, date formed, contact details, and activities at Independent OSE Groups on the wiki.
Chartered OSE Organizations – OSE Development Facilities

OSE has a good chance to change the world. To maintain and enhance a strong identity as a world-changing organization that produces transformation of economies, we are setting high standards for new facilities. New facilities, if chartered as an official part of the core development work of OSE, must comply with the distributive economic goals of the OSE Paradigm. Moreover, if the OSE Paradigm is indeed effective – then the new organization should have a significant and visible effect on the economy – not only in terms of achieving a post-scarcity economy on its own soil – but also in instigating the same in surrounding communities. Visible economic and political transformation should occur on sub-decade timescales in these communities. A network of thousands of communities as such is expected to arise within about 3 years of GVCS completion of year-end 2012. This is a seed for thorough global transition to the open source economy, and to Open Source Ecology.

To achieve this, a Chartered OSE Organization must be:

A land-based facility, where the land is placed in a trust as a site of permanent human heritage. This is intended to guarantee continuity and significance to any new effort of this nature.

A beacon of light for its local community, which demonstrates in itself a functional community operating under the conditions of material post-scarcity.

A development and education center and a place of lifelong learning, with the ideal of creating the next generation of responsible stewards of their communities and of the greater world in the context of the open source economy.

A productive facility and a product development center capable of producing all of its essential needs from local resources.

A change agent for surrounding communities, the success of which is measured by the adoption of open source economic and OSE practices in the surrounding communities

Populated by full-time individuals who live a post-scarcity economy lifestyle – where a high standard of living is achieved from local productivity.

The enabling technology base for such a community is the complete set of 50 GVCS tools, or a related infrastructure package that provides for all of the community's material and energy resources.

The above is not an easy task, and we are looking for initial discussions with small core groups of movement entrepreneurs interested in starting such new facilities. These core groups must have demonstrated the practical, tactical, and people skills to organize rapid learning and development efforts required for the successful startup of such communities.

The benefit of OSE-chartered status is the publicity, funding, and access that comes from that relationship. We are willing to consider other types of chartered organizations under specific terms. Otherwise, another route is operating as an independent OSE effort as in the previous section.

Certified OSE Producers

OSE International is currently developing training programs and infrastructures for producer training. Typically, a producer is a skilled craftsman who picks up additional skills during a build of one or more complete machines as part of their training. Another route to producer training is for independent producers to submit finished copies of devices for quality control approval by members of the OSE International certification committee.

Certified producers may sell under the OSE brand. OSE can provide marketing assistance. In return for certification, OSE Certified Producers are required to pay 5% of their net. This funding goes to support the development of the GVCS and the replication of OSE Development Facilities. Non-certified producers do not have to pay a license fee if they sell under their own label.

Chartered OSE Organizations

Becoming a chartered OSE Organization is not a task to be taken lightly, as the goal of OSE as a movement is to produce disruptive change. Starting a branch means creating the substance of the next economy. Our goal is to create a strong identity for OSE as a clear and positive change

Open Source Ecology

agent who delivers tangible results. Anything short of this is diluting the message, and does not help the movement as a whole.

If you would like to be endorsed as an official OSE facility, the first thing is a charter – defining your goals clearly. This includes the resources you aim to secure, distributive enterprises that you aim to develop – and the team that will help you get there.

We are interested in assisting startup facilities in the full capitalization and infrastructure to create powerful development and productive facilities – starting with land. To facilitate this – we suggest that the timing for this would occur after the 50 GVCS tools are developed, or after Dec. 21, 2012. The reason for this is that once the 50 tools are available, startup costs will be decreased significantly – perhaps from $1M for a new facility to $100k.

We aim to provide startup assistance in the form of immersion training and capitalization assistance. We suggest that a core team of 2-4 people come to Factor e Farm for 6 months of immersion training. The core team would pick up a wide range of practical village construction skills – from digital fabrication, integrated agriculture, renewable energy, housing construction, and others. This training may be funded by grants or production earnings.

Capitalization Assistance Model

During the immersion training, trainees will have a chance to build real products that can be sold. With the economic power of the GVCS and social capital of OSE, marketing is not expected to be a barrier to successful fundraising by production. We expect that a single trainee should be able to generate $5k of value per month, assuming ½ time participation in production at 50% capacity compared to a professional fabricator. We have initial evidence that with proper guidance and sound ergonomic design of the workshop – this is a realistic proposition. For a 6 month duration, that is $30k value generated per person. This is sufficient to generate significant capital for startup. If the cost of training is $10k per person, then a core team of 4 trainees can leave their 6 month immersion training with: (1), a highly integrated, practical skill set covering all sectors of the productive economy (agriculture, construction, energy, technology); (2), connection to a network of change agents around the globe; and (3), $80k of startup capital for their own facility.

This is the type of commitment that we expect from startup instigators in other locations around the world – if the expectation is full endorsement and support from OSE headquarters.

Note On Strategy

In 2013, we will be expanding to other goods and services, but for now, we are focusing on the GVCS 50 as the strategic core. Once developed, this will provide the track record, process, and economic power to diversify into other products and to facilitate the creation of communities, enterprises, and new countries. Remember that this is an Apollo Program for the GVCS – and we expect to finish the 50 beta product releases by December 21, 2012. If things continue as they are

now, we may be done ahead of schedule. Completion of the GVCS provides everyone with a much larger index of possibilities for 2013.

Strategically, OSE International is putting all its effort into securing and allocating the $5.5M that it will take to develop the GVCS 50 by year-end 2012. This is a monumental organizational task, and it requires our full attention. Anything not related to this plan is a distraction to the core effort. We ask the rest of the community to help out in the GVCS 50, and in particular, in the Factor e Farm experiment. This focus has to happen for only 1 year. Access to all the 50 technologies will mean about a 10x reduction in startup cost of any new OSE-related effort. The GVCS 50 is the key to viral replication. Therefore, it is better for the whole movement that all effort is spent on the GVCS 50 – and get it done even ahead of schedule. Then, the possibility of viral replication will be real.

If you are considering replication right now – you have to consider that we have only 4 beta product releases – which does not address fuel, power, or fabrication aspects of a robust community. Yes, new facilities can be built right now – but at high startup costs. My personal frustration is that everyone thinks that we have all the technology already. We don't – we are in development – and moreover, these products need to go through the thousands of hours necessary for general adoption by the rest of the world. As such I ask this Christmas day that we all work together to get there, and magic will follow.

I know that many people are itching to get involved – this was exactly my state about 6 years ago. I found out that access to the enabling tools crushed my whole initial plan. That is a condition that anyone will still face today – until many more of the GVCS 50 tools are done. We have too few of the tools developed as of yet to make replication a painless process. Even with all the tools available – there are enough things that can go wrong – that my best advice to anyone is not to do this until all the tools are available. It will simply be easier for everybody involved.

We would like to continue making this one of the most collaborative projects in the world: open engineering, open economic development, and distributive enterprise for the common good. Let's work together to make this happen.

1.5 From the Founder: My Story
Marcin Jakubowski, 12.24.2011

I have been asked a number of times – what experiences led me to start OSE? I am sharing my story here to shed some light on the formative experiences influencing this work, with the hope that they may help to clarify the approach.

Ever since I was a little child I wanted to apply science to creating human prosperity. Wow – with all the Amazing technology around us – life should be good. My father is a molecular biologist, and ushered me to go high in academia. But the further I went the more useless I felt, while noticing that there were pressing global ills to solve. It was during my Ph.D. Program in Madison, WI, that I got radicalized. I discovered firsthand the myth of technology – with ever improving technology; people are still working harder and harder, missing out on the finer things in life. This troubled me greatly.

In Madison, there was a string of events that led me to formulate the Open Source Ecology concept. It actually started at Princeton U, where I went for my undergraduate studies. I found Princeton to be a shocking wake-up call – more a breeding place for the power structure of the world – less a playground for ideologues improving the human condition. I vowed after this never to go to another Ivy League, and found myself at U. Wisconsin, Madison, for grad school - a progressive, rabble-rousing environment. Soon enough, I became totally disillusioned with my studies – I was becoming more specialized and useless every day – and I was learning theory about things that didn't exist. I felt that was a great abnegation of human responsibility – given that there are pressing issues in the world to solve.

So I started getting involved in the student community to remain sane. I started the Polish Club to bring the Polish crowds together, then Global Connections, to get all the internationals together. Then I moved on to organize interdepartmental grad student socials – since we never had a chance to interact with anyone outside of our department. Since I was interested in energy, I started a Global Energy Forum, and then Sustainability Forum to immerse intellectually in sustainability issues, then Gandhi Network to get some hands-on experience beyond the mind, such as building a solar dehydrator.

Through all of these events, I learned 2 things. First, people rarely collaborate or cross disciplines in their work. Second – people did not have time to do cool things any more. Lectures and workshops were all fun and games – but they were really brief sessions of escapism - as nobody really had the time to pursue any of the topics discussed more deeply. People go to the talks and workshops - then they go back to work for the man on Monday. What was needed was a different lifestyle, a new economy – where people were not so alienated from their work, where they could pursue the things that they really care about. It is then that I thought that civilization needed a thorough reboot in terms of right livelihood and meaning in peoples' lives. The economy and environment and social justice were all in havoc all over the world – yet everybody was going about business as usual.

Then it became crystal clear to me – only if we collaborate truly openly – as in creating an open source economy where people actually build freely on each other's progress – only then can we achieve a sound economy – and spare time. This became clear to me when I could not discuss my PhD research openly with other university groups – because we had hot stuff and competitive advantage for funding. Thus, my learning process was hampered. That frustrated me to the point that I decided I would work wholeheartedly to change this aspect of modern civilization.

In my last year of the Ph.D. Program, I coined the Open Source Ecology concept. It was about creating an open source economy – based on the principles of collaboration that came from the open source software movement. I claimed that if we operate openly, we learn more, we become more responsible, which includes responsibility for taking care of nature – as it is the source of all of our material well-being. Therefore, open source ecology refers to the integration of human and natural ecosystem into a harmonious system of interactions, based on open source principles of cooperation.

Any civilization starts with access to land – so in my own civilization reboot experiment, land was the first thing I secured after my PhD. In the initial phases, with little money and big dreams, voluntary simplicity was my only option, and I explored the limits of how little one could do with. But that got old after some time. I was living like a hippie in the woods with a pocket knife, and it occurred to me quickly that a firm economic foundation and powerful tools were necessary if one is to face nature and ask her to provide directly for one's needs. I also learned quickly that use of nature does not have to mean abuse of nature. I also learned that we have the technology to do things right – in harmony with nature – and it is only greed and myths that dictate that human prosperity should be at odds with nature. I learned firsthand from the land - that nature is abundant – and that general human prosperity is a matter of distribution – not production.

So with this, my tractor broke, and the rest is history as you see in my GVCS TED Talk of 2011. Point is: we can create open source equivalents to industry standards – AND take care of the environment, AND in fact, we can do much better all together by eliminating the inefficiencies of competitive waste in all its forms. Globalization is a simple manifestation of competitive waste – competing for strategic resources because we refuse to learn how to use local resources more cunningly to achieve the same ends.

I also come from Poland, with its long history of war, surrounded by powerful neighbors. My grandfather was in the Polish underground engaging sabotage actions against Nazis during WWII, and he was a horseback soldier in WWI. My grandmother was in a concentration camp. I read all types of books on these troubling topics, as they are fascinating – regarding the nature of the human spirit under extremes of conditions – playing out the good old fight of good versus evil.

I pictured myself living in those times, and still have bad dreams from time to time - and put myself in the place of the people in these books - and consider how I would act myself. And today, I grasp to understand why we are still so un-evolved as humans, still killing one another.

The most fascinating explanation I have yet read on the topic – and interestingly – from a survivor of turbulent political times of post-WWII Poland himself – is Political Ponerology: a Science on

the Nature of Evil Adjusted for Political Purposes. That is the most important book on the topic of achieving general human prosperity that I have read. It is a psychological study that explains why psychopaths tend to move up in corporate boardrooms and in positions of power – and how all of us support them - in getting there.

Today I do my part in the open source 'underground' – a fringe movement still, waiting to be the next trillion dollar industry. Except this time, it will not be a centralist phenomenon – but a movement created by many independent players. If we open source a few critical yet sufficient technologies for survival as a species – then a shining example can be set, and a solid economic foundation can be laid – for human progress. My role is to seed a kernel, in the form of the GVCS 50 tools – and the economic power created will take care of the rest.

What is the rest? When people address basic material scarcity – a new economy, and new politics, will follow. It will be a new paradigm. What do I see myself doing then? I will be spending my full attention on how to become a better human, and helping others to do the same. This depends on material scarcity being removed as one of the stresses affecting humanity, as mastering material security is a prerequisite if we want to have a fair chance – of evolving to freedom.

New education, new communities, and new politics – they are all around the corner. Even when the world is cracking at the seams, the human spirit will never die.

How are you doing your part to play this out?