Open Source Ecology[1] (OSE) is a network of farmers, engineers, and supporters engaged in creating the Global Village Construction Set (GVCS), a low-cost, high-performance, open-source, do-it-yourself platform that allows for the easy fabrication of the 50 industrial machines that it takes to build a small civilization with modern comforts. The GVCS includes machinery, equipment, tools, components, and other infrastructures for creating a complete economy: food, fuel, energy, building materials, transportation, and fabrication.

Our goal is to encourage the development of localized industrial enterprises by simplifying the designs and lowering costs associated with fabricating productive machinery. For example, our designs can be created up to eight times more cheaply than it costs to purchase a retail counterpart and made with low-grade, abundant, local resources.

For each machine, through the open source platform, we include the following: (1) design rationale; (2) 3D CAD files; (3) 2D fabrication drawings; (4) CAE analyses; (5) CAM files (where applicable); (6) exploded parts diagrams; (7) bills of materials and sourcing information; (8) scaling calculations; (9) A-Z instructionals; and (10) cost and performance comparisons to industry standards. All documentation is openly available on our website, along with high-quality video tutorials showing how to fabricate the machinery. The website also includes a community-developed wiki, online forum, and blog for assisting independent replications of our designs.

Open Source Ecology was founded by Marcin Jakubowski, PhD in 2003. He is a graduate from Princeton University and a 2011 TED Fellow[2]. OSE has successfully designed, prototyped, field-tested, and documented four of the 50 designs: the tractor, compressed earth brick press, soil pulverizer, and hydraulic power unit. We are finalizing construction of a 5,000 fabrication facility, using machinery we designed and built, in preparation for our rollout plan for the remaining GVCS machines throughout 2012.

Since many of our outputs and outcomes are tangible products, tracking our progress is fairly straightforward. We have established a ten-point standard for the GVCS: open-source, low-cost, modular, user-serviceable, do it yourself, closed loop manufacturing, high performance, flexible fabrication, distributive economics, and industrial efficiency. Furthermore, given the collaborative nature of open source design, quality control essentially takes place with multiple redundancies.

Open Source Ecology has partnered with The Terra Foundation of California as its 501c3 fiscal sponsor. We have diversified our income to include support from foundations, private contributors, and a micro-funding program called the True Fan campaign, where individuals pledge $10/month, which currently has over 440 members. We also were selected for a $60,000 grant from the Kauffman Foundation and received a $60,000 anonymous contribution to help construct our fabrication and training facilities. Further, we recently completed a successful Kickstarter campaign for $63,573, which we felt was a proud demonstration of our broad public support.

Our funding request covers partial completion of the Global Village Construction Set. This involves designing, prototyping, field-testing, and documenting the machinery as well as the material costs of the equipment. The following is a complete list of estimated costs associated with finalizing the entire GVCS set:

[1] http://opensourceecology.org/
[2] http://www.ted.com/talks/marcin_jakubowski.html

Global Village Construction Set – Design and Prototype Cost Estimates

Machine	Design/Prototype Costs
3D Printer	*external design*
3D Scanner	$45,000
Aluminum Extractor	$150,000
Backhoe	$45,000
Bakery Oven	$45,000
Baler	$45,000
Bioplastic Extruder	$45,000
Bulldozer	$105,000
CEB Press	*completed*
Cement Mixer	$9,000
Chipper/Hammermill	$15,000
CNC Circuit Mill	$3,000
CNC Precision/Multi-machine	$50,000
CNC Torch Table/Router Table	$15,000
Dairy Milker	$30,000
Dimensional Sawmill	$29,000
Electric/Motor Generator	$45,000
Gasifier Burner	$45,000
Hay Cutter	$15,000
Hay Rake	$30,000
Hydraulic Motors	$45,000
Induction Furnace	$150,000
Industrial Robot	$22,000
Ironworker Machine	$45,000
Laser Cutter	$45,000
Metal Rolling	$150,000
Micro-Combine	$90,000
MicroTrac	$45,000
Modern Steam Engine	$90,000
Nickel-Iron Batteries	$90,000
Open Source Automobile	$90,000
Open Source Truck	$90,000
Pelletizer	$9,000
Plasma Cutter	$45,000
Power Cube	*completed*
Press Forge	$45,000
Rod and Wire Mill	$150,000
Rototiller	*completed*
Soil Pulverizer	*completed*
Solar Concentrator	$30,000
Spader	$45,000
Steam Generator	$45,000

Tractor	*completed*
Trencher	$15,000
Universal Auger	$9,000
Universal Power Supply	$150,000
Universal Seeder	$30,000
Universal Welder	$45,000
Well-Drilling Rig	$45,000
Wind Turbine – 50kW	$150,000
Total	**$2,531,000**

Our intention with the development of the Global Village Construction set is to create affordable industrial machinery that requires minimal upfront capital investments. As individuals and communities begin using these designs, our task is to train producers in the implementation of open source, distributive enterprises. We feel that this effort will ultimately reinvigorate the economy from the ground up, and we would like to invite The IBM International Foundation to partner with us in this endeavor.

*Thank you for considering our request for a grant in the amount of **$200,000.***

Sincerely,

Aaron Makaruk
Director of Development
Open Source Ecology
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