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~~**OPEN HARDWARE ADVOCATES CREATE INITIATIVE FOR AFFORDABLE, REGENERATIVE HOUSING**~~

~~**The Open Building Institute and Open Source Ecology Form JV for New Affordable Housing Initiative**~~

~~**Eco Housing Startup Builds Expandable Starter Homes 10x Cheaper Than McMansions**~~

TED Fellow Duo Creates Tool Kit for Affordable Eco Building

Tool kit includes designs, software, machines, and materials.

On Tuesday, June 14 - two open hardware advocates and TED Fellows kicked off a joint venture on the Open Building Institute (OBI) - a tool kit to make affordable, regenerative housing widely accessible. Catarina Mota, Ph.D., co-founder of Open Materials, and Marcin Jakubowski, Ph.D., founder of Open Source Ecology (OSE), are announcing a 2 year plan culminating in Living Building Challenge (LBC)-compliant homes. The OBI website, http://openbuildinginstitute.org - launched Monday, June 13.

The OBI tool kit contains an open source toolchain for all phases of building, including materials production. It includes finished designs, design software, machines for construction and production of building materials, and a training program for builders. (link to Big Picture How it Works Infographic)

Using machines in the tool kit, one can produce stabilized CEB brick, lumber, lime concrete, bio-fiber insulation, paint, and glazing - from materials sourced within a 50 mile radius. (link to Eco-Materials Infographic)

The cost of the basic 700 square foot Starter Home build using the OBI tool kit - planned for a November 2016 build - is $33k - of which $23k is materials. The labor cost is included in an innovative social production build model - where apprentices pay to build the house. (see how it works infographic)

~~**OBI was formed in 2016 to provide high quality, ecological homes that the average person can afford, avoiding burdensome mortgage payments**. OSE was founded in 2003 to make closed loop manufacturing a reality, by developing 50 critical infrastructure-building machines that can be replicated inexpensively anywhere in the world. OSE's contribution to OBI is a set of materials manufacturing and construction machines. Both organizations imagine a world with little to no mortgage/rent or utility costs— a significant step towards personal freedom. (See OSE 20 Year Roadmap)~~

The Starter Home is designed for a 5 day build, starting from raw building materials. It is based on a modular building system - and is a culmination of OSE construction experience from 13 builds since 2006. The modularity takes advantage of a large team working in parallel on multiple modules at the same time - known as Extreme Manufacturing. Using this system, OSE has developed the capacity to harness 50 people to build 800 square foot structures - in 5 days - without requiring skilled trades. The founding partners believe that the method can scale readily to structures 3x the size - while remaining within a 5 day time budget. (see how it works infographic)

The initial step of the venture includes seed crowdfunding - for prototyping - as well as the creation of a 6 month immersion training program for builders - to take OBI services to other locations. A Kickstarter has launched on Tuesday, June 14. (link to Kickstarter)

Prototyping for continuing improvement includes a minimum of 6 new house builds of the 700 sf model over the next 2 years, of which 4 will be offered as rewards in the Kickstarter campaign. The 2016 model contains significant ecological features, and the 2017

model will be submitted for Living Building Challenge (LBC) compliance. The LBC certification is the world's most stringent ecological accreditation for buildings. (link to schedule on site)

Further prototyping in 2017 includes a 4000 square foot, solar-powered flexible manufacturing Eco-Materials Facility for producing local brick, lumber, insulation, paint, and concrete. Multiple workshops will be offered where participants learn to build these machines. The Eco-Materials Facility is part of OBI's comprehensive strategy to enable predominant use of natural and recycled materials - with at least 75% of the sources located within a 10 mile radius. This is intended to reduce environmental impact, as construction is the single most polluting sector - accounting for 39% of all fossil fuel carbon emissions in the US. (link to materials facility infographic)

The project founder and lead designer, Dr. Mota, says - "The average American spends $1.2M over their lifetime just to have a home. And according to the UN, 1.6B people worldwide lack adequate housing. We think that there is a clear solution to these issues."

Dr. J is excited - "Even though we had our crazy open source machines for years, only now are we tapping the power of efficient design - and succeeding at house builds that last only a weekend. It's time to bring this to the rest of the world."

Bob Berkebile, co-founder of the Living Building Challenge, comments on OBI, "the time for regenerative housing is now, and this initiative shows lots of promise."

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Images?

Not Just Another Affordable Housing Program?

The Open Building Institute is a crowdsourced effort to make regenerative, affordable housing widely accessible. While many affordable housing programs have been proposed by other groups, the unique feature of OBI is its triple open source scope: design, build, and materials.

First, the design platform is based on 100% libre and open source software. This allows anyone to use and contribute to the platform, ~~using universally accessible software,~~ according to established design rules and submission guidelines.

Second - a set of supporting construction machines is being released as part of this campaign - also developed under an open hardware (OSHWA) compliant license. These include a tractor, backhoe, trencher, sawmill, brick press, and other equipment.

And third - open source materials are being developed - to address the construction sector's claim as the single largest source of CO2 emission. The 2 year plan involves the construction of an off-grid, local materials production facility that can produce bricks, lumber, concrete, biofiber insulation, paint, and glazing - all from locally-sourced and natural materials, and using 100% local, renewable energy in the process.

These 3 points of scope allow anybody to get involved in the process of house making, while using primarily local and regenerative materials.

The design platform consists of a library of building modules - everything from a wall panel, roof section, and literally the whole kitchen sink - that can be used as a construction set for building ecologically sound housing. This is like lego blocks for life-size building. The intended audience is owner builders, and social entrepreneurs interested in building affordable housing centered on ecological features.

Advanced ecological features, from off-grid energy, passive solar design, closed loop water cycle, biogas and solar hydrogen production, to local materials usage - are essential in the 2 year plan. These are also implemented as modules that can be selected depending upon the client's need. Because the system is highly flexible and customizable, a wide variety of homes can be constructed,

The OBI initiative is also developing a training program for builders. The goal is to spread the OBI construction techniques by training OBI-certified builders, so that clients can contract an OBI build anywhere in the world.

The project founder and lead designer, Dr. Mota, says - ~~"We have recruited Bob Berkebile - regenerative architecture pioneer and co-founder of the Living Building Challenge - as an advisor to guide us towards compliance with this world's most advanced building certification program.~~" "The average American spends $1.2M over their lifetime just to put a roof over their head. And according to the UN, 1.6B people worldwide lack adequate housing. We think that there is a clear solution to these issues."

Dr. Jakubowski, project partner responsible for technical integration and development of ancillary open source construction machines, expresses , "We will be prototyping the first version of the affordable ecohome in 2016, with an intent to meet the prestigious LBC certification in 2017, and make such quality a standard offering in the OBI package."

The revenue model for OBI involves a crowd funding seed funding phase, followed by revenue from house builds and training program. The OBI Kickstarter is officially beginning on June 14, with a 30 day duration.

The OBI initiative's open source approach involves tapping the guidance of leaders in many areas of regenerative construction. Dr. Jakubowski intends to build an advisory panel with over 100 leading practitioner advisors in the first year. All knowledge and designs will be published openly, without exceptions - as the initiative is grounded in a culture of open source.

OBI believes that by publishing and sharing all of its material, it will have several positive effects, and that open source is implied in the very definition of 'regenerative'. Open source lets anyone and everyone contribute to the advancement of a concept, directing more brainpower to accelerate innovation on any specific challenge. When using this method, competitive waste is replaced with collaboration, which may lead to superior results. Open source also circumvents an inefficient distribution system. By providing online access to simple, easy to follow plans that could be made locally, the need for shipping is greatly reduced.

Dr. Marcin Jakubowski, Ph.D. founded OSE in 2003. Since its inception, the company has grown into one of the premier open source hardware movements. OSE is one of the first

companies of its kind to apply the open source software model to hardware. OSE's unique contribution to open hardware is an innovative production model, known as Extreme Manufacturing. Based on modular design, this approach involves rapid builds with a large team working in parallel. This is the key process that Dr. Jakubowski is now contributing to OBI. The process allows a 700 square foot structure to be built from scratch in only 5 days - via modules that are built completely in parallel on the ground, and then assembled rapidly into place.

Dr. Catarina Mota co-founded Open Materials in 2009, and presented a TED Talk on the topic in 2012. Since its inception, the vision of the project has shifted towards open materials for construction - an economic sector of vital importance - and has led her to founding OBI.

The idea for OBI started when Dr. Mota left Brooklyn to join the OSE research and development facility in Maysville, Missouri. The couple got married in December, and joining in a particularly harsh winter - Dr. Mota concluded that the housing infrastructure needed serious attention. Both organizations share a vision of creating a world-class R&D campus for open source product development, where open source business models are developed within the framework of a distributive enterprise.

If you would like more information, or to request an interview, please contact Marcin Jakubowski at the number above.