

FABSHIPS

Off-grid maker spaces for a better world

Fabships

A Fabship is a fully-autonomous FabLab powered by renewable energy and Earthship living systems. In other words, it's an off-grid workshop that harnesses the power of nature, technology and community to *Build (Almost) Anything, Anywhere*. Fabships are the innovation space behind thriving off-grid communities, empowering people through energy efficient fabrication. Locally sourced and globally connected, Fabships are an alternative model of production that transcends the “take, make and dispose” industrial mindset that is decimating our planet. They aim to catalyse circular economies in ways that can be responsive, productive and regenerative for both our common wealth and the planet. By combining both low and high-tech methods and practices, Fabships can teach open-source fabrication in an energy conscious and sustainable way.

FabLabs

As defined by the Fabfoundation, FabLabs are technical prototyping spaces for innovation and invention, providing stimulus for local entrepreneurship. They are the educational outreach component of MIT's Center for Bits and Atoms (CBA), an extension of its research into digital fabrication and computation. FabLabs are also platforms for learning and innovation: a place to play, to create, to learn, to mentor, to invent, to repair. To be a Fab Lab means connecting to a global community of learners, educators, technologists, researchers, makers and innovators, a knowledge sharing network that spans 30 countries and 24 time zones. Because all Fab Labs share common tools and processes, the program is building a global network, a distributed laboratory for research and invention. Given the power of the Internet, digital fabrication and open source technology, some talk of the next manufacturing revolution, and there is no doubt that the democratisation of productive power is shifting paradigms and re-inventing industries.

Earthships

Based in Taos, NM, USA, Earthship Biotecture, has been for the last 50 years a pioneer in eco-construction, building off-grid homes with natural and recycled materials. Started in the desert of northern new mexico, their projects include now disaster relief and humanitarian builds around the world. Today Earthships are tried and tested models for autonomous and sustainable living. They address six basic human needs: comfortable shelter, renewable energy (solar/wind/water), sewage treatment, using recycled materials, water harvesting, and food production. These off the grid homes have been built in many extreme and diverse climates. Earthships have evolved through many models, and as a result their designs and systems have gradually become more practical, affordable and efficient. Earthships are carbon-negative, energy-independent and fully functional vessels that not only brings all the comforts of a conventional home, but also create a positive and regenerative environmental footprint.

Empowering boundaries.

We consume more than humanity can afford. We produce more trash than our planet can handle. These behaviours are politically and economically complex, and will never be changed at the institutional level until we create autonomous and engaged communities who demand and do better. Awareness is the first step, but until the natural limits of what we use, consume, and dispose become tangible on an every day level, there is little hope for change. Finding and creating these limits, far from being an impairment, challenge our boundaries and help define our freedoms. Energy independence is a great freedom, and with it comes great responsibility. Fabships are about respecting this balance, creating a more sustainable model of distributed fabrication. Fabships empower communities to become autonomous, resourceful, and creative. They encourage innovation by sharing knowledge, resources and ideas. Fabships encourage humans to develop *with*, and not at the expense of the natural common wealth we all depend on.

A double challenge.

Fabships inspire autonomous communities and maker-spaces to explore the boundaries between self-sufficiency and fabrication. How much, how fast, and for how long can we make things by using only locally harvested, renewable resources? Must natural phenomenon dictate what we should be making or rather guide us to rethink how we can make it? How much energy does it take to 3D print a power generator? The idea is not to limit but to channel the creative use of modern fabrication to the needs of communities that want to be self-reliant. This is the main challenge. The more evident hurdle is how to build a Fabship to include all basic tools and machines required by a FabLab. This is not as simple as hooking up a few extra solar panels on the roof. The technical specifications of a FabLab require adequate air extraction, as well as reliable and continuous power supply for the machines. They must also provide important health and safety obligations and ensure of

proper waste disposal, water supply, temperature regulation, to name a few. Here is where Earthship design and construction comes into play to provide the most efficient and low cost environment for a fully-functional off-grid Fablab.

How to Build Essentials Anywhere?

Manufacturing is energy intensive. Bar a few exceptions, it is largely restricted to developed, urban areas that have a reliable connection to centralised power grids. But what if you could run a digital manufacturing space totally off those grids? What if FabLabs could be 100 percent energy independent, or service communities further afield, creating their own on-site energy generation and storage? What if FabLabs were not only servicing the netizens of big cities, schools and universities, but also empowering smaller, more remote communities, towns and villages? Fabships may not be as driven to *Make (almost) Anything*, but can certainly be repurposed to *Build Essentials Anywhere*. The emphasis on “build” is social rather than material, as Fabships are as much about building community as they are about personalised fabrication. Such off-grid manufacturing spaces can help people who are being left further behind in the industrialized rat race. They can involve remote communities in circular and more networked economies. They can empower them to provide for their basic needs and more. It takes no stretch of the imagination to see Fabships creating vibrant economic alternatives to the choking and overcrowded megacities of the now-future.

We are not alone

Initiatives such as Fab Cities are pushing the boundaries of urban development to create self-sufficient and globally connected cities. This is incentivising the mega cities to reduce their dependence on imported goods and waste culture, as well as encouraging recycling culture and local supply chains. Global institutions are also catching on. There is a growing drive towards finding more sustainable forms of production and consumption. The UN Sustainable Development Goals and Agenda 2030 are encouraging this shift towards more resource efficient infrastructure and production. Despite the worrying backpedaling, many companies and governments are slowly waking up to the changing tides. The time is now. Today 54 percent of the world population live in urban areas. This is only set to grow. According to the Ellen McArthur Foundation cities will consume up over 75 percent of global natural resources, producing over 50 percent of global waste, and up to 80 percent of carbon emissions. These are worrying trends, but not inevitable. However positive the changes resulting from increasingly affordable and powerful technology, it can only be appraised against the global ecological crisis in which we find ourselves. There is no escaping that humanity is at a critical cross-road. Never too late are we beginning to acknowledge the devastating consequences of mass overproduction, consumption, and climate change.

Academies Unite

Bringing together FabLabs and Earthships also has the potential to connect two active, world wide and creative communities, providing a cross-fertilization of ideas and projects. The FabLab movement ([map of fablabs](#)) has been growing steadily over the years through it's [Fab Academy](#) program: a five-month intensive course hosted by individual Fab Labs across the world in partnership with MIT's Center for Bits and Atoms. It teaches students *How to Make (almost) Anything* using a number of tools and techniques. Similar in scope and intention is the Earthship movement ([map of Earthships](#)) through its [Earthship Academy](#). It has trained thousands of students from all around the world and from a variety of backgrounds, giving them practical experience in autonomous living principles and construction. The two programs are compatible in more ways than one. For Earthship, learning how to design and fabricate systems that can enhance the efficiency, sustainability and adaptability of off-grid homes. For FabLabs, it brings Fab Academy to off-grid communities, expanding the reach and access of common tools, processes and open source technology in an energy efficient and conscious way. The Earthship community in Taos counts 100 residents and with the Earthship Academy and internship program, more than 400 students get educated at this location each year. This, together with the local team of experienced builders and teachers, makes this community an ideal case study to implement the first fabship.

Making care, off-grEEd.

Fabships aims to be incubation, innovation and education spaces for communities who want to be more self-sustainable. They can help innovate new ideas and systems for these communities, provide a creative and educational center, and teaching old and young alike *How to Build Essentials Anywhere*. Using common and digital tools, Fabships can teach the practice of autonomous living systems and sustainable fabrication worldwide. Technology is not an end in itself. The end is how we apply technology to better serve our collective human needs and those of the Earth we all call home.

We welcome your feedback and involvement.

We are looking for financial support for setting up the first fabship.

Our website : <http://fabship.cc/>