

# Chapter 1

## Green Fab Lab

### **ABSTRACT**

*Green Fab Lab is nestled in the Catalanian area of Eastern Spain in the mountains surrounding the metropolis of Barcelona. Located on what once was a vacation and hunting ground for Spanish royalty, the Valldaura Estate, which houses the Green Fab Lab, sits on 130 hectares of forest. The site is part of a movement to be self-sufficient and sustainable, using locally sourced material. The current space is one of many Fab Labs in Barcelona and is part of the IAAC (Institute for Advanced Architecture of Catalonia), which is a world-renowned school of modern architecture. The space is about 2152 ft<sup>2</sup> (200 m<sup>2</sup>), with a full complement of Fab Lab equipment and machines as well as a small bio space. Within the space, learning communities are often developed through the communication of students in the Fab Academy, Bio Academy, or Zero courses and local gurus in the space or in the community. This chapter explores the Green Fab Lab.*

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*That's a fundamental in all of it is to ... Yes, the facilities are there but it's not the facilities that give the answer. It's the people who use them, so they have to be the leaders of their own design. Otherwise, this idea of mass customization means nothing. It's from mass production to mass customization is to change some of what these facilities' offer. — Jonathan Minchin*

## **ORGANIZATION BACKGROUND**

Nested in the middle of 130 hectares of pine forest is the Green Fab Lab at Valldaura. The site sits on top of a hill surround by the Collserola Natural Park and is seemingly many miles away from the hustle and bustle of downtown Barcelona, Spain. In reality, Green Fab Lab is a short distance, about a 15- minute drive, from the downtown area and nestled in the pre-Pyrenees mountains, within sight of the Barcelona Montserrat where the famous monastery is located. The building that houses the Green Fab Lab is a restored hunting lodge from the 11<sup>th</sup> century, originally built by the Catalina Spanish kings and queens. The estate hosts 10 bedrooms over three floors with a kitchen and meeting area on the main floor, bedrooms upstairs, and fabrication areas in the basement. It was during the French Revolution that the monarchs, feeling threatened by the invading French army, gave the estate away to a non-royal family as a way of protecting it from the marauding French. Figure 1 is a view of the main building, approaching from the southwest.

The estate was re-opened in 2014 and is now owned by the Institute for Advanced Architecture of Catalonia (IAAC), which is also part of the international Fab Academy network led by the Massachusetts Institute of Technology (MIT). Jonathan Minchin is the director of the Green Fab Lab and provided a background on the relationship between Green Fab Lab, IAAC and its role within the city of Barcelona. IAAC is a nonprofit foundation that has operated for around 17 years and is organized into four departments; research, education, production, and outreach. The education department at IAAC offers several degrees including master's degrees in advanced architecture, city and technology, and advanced interaction, as well as Ph.D. programs in the areas of InnoChain network, integrating building, physics for performance control, and small-scale robotic manufacturing for Large-Scale Buildings (IAAC, n.d.). The Green Fab Lab is part of the Valldaura Project for self-sufficiency located at the Collserola National Park.

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