

Distributed design and build on the Fab City Car project knows no boundaries thanks to HP Designjet ePrinters



At a glance

Industry: Architecture, Engineering & GIS

Business name: Fab Lab Barcelona

Headquarters: Barcelona, Spain

Website: fablabbcn.org



Challenge

- Accelerate design workflow by seamlessly distributing and sharing large-format printing of drawings and plans across remotely located Fab Labs for review.
- Exploit wireless technology to print plans and drawings in a distributed design environment.
- Addition of large-format printing technology as an easy-to-use tool integrated into Fab Lab design and build setup.
- Adopt large-format printing technology with the capability to operate in a design environment that is open source, multiplatform, and can print independently of proprietary software applications in resource-limited environments.

Solution

- The internet-connected HP Designjet T520 ePrinter offers wireless printing of large-format plans and drawings.
- Print accurate, high resolution plans and drawings on HP Coated paper.

Results

- Fab Labs proofed final manufactured parts on full-size printed blueprints to verify quality and build accuracy and avoid costly errors.
- Allowed Fab Labs to print plans remotely on any internet-connected HP Designjet ePrinter to see each other's work independently of local platform or software application.
- Accelerated project turnaround with progress across time zones thanks to distributed design enhanced by internet-connected large-format printing of plans and drawings.
- Fab Labs exploited greater ability to pool expertise across geographies, optimising resources and increasing innovation thanks to closer collaboration offered by HP Designjet ePrinter connectivity.

“Anywhere in the world, a connected HP Designjet ePrinter allows people to accurately print the large-format drawings they need without any expert knowledge of files, formats, printing or networks, or even software applications. It is a ‘democratisation’ of technology that is accelerating innovation.”

– Tomas Diez, director,
Fab Lab, Barcelona

The ‘Fab City Car’ is an open source concept vehicle revolving around giving people the ability to modify, customise, and adapt the vehicle to their specific needs at any given time anywhere in the world. Fab Lab Barcelona council and the HP Designjet team decided to join forces with three other Fab Labs: Garage Fab Lab, (Sao Paulo, Brazil), FabCafe Tokyo, and Fab Lab Manchester to develop the proposal.

“It’s a car that you can personalise in order to fit your needs of transportation. All the designs are open source, so that anyone can download them, adapt the design to their particular need, and produce it in a Fab Lab near to them,” explains Luciano Betoldi, manager at Fab Lab Barcelona. Today, worldwide, there are more than 350 Fab Lab ‘containers’ for machines and workspaces for people and projects – just seven years ago there were only seven. They are mainly free and open to the public, cooperate with many other Fab Labs and take part in network initiatives.

Over three months, each lab worked remotely on different components of the car. HP donated four large-format HP Designjet T520 ePrinters to fully equip the labs in the distributed design process. In a multiplatform, open source environment the HP Designjet T520 ePrinters’ ability to wirelessly print large-format plans and drawings anywhere and everywhere, be it across the building, from floor to floor, or on another continent, transformed the creative workflow.

From the drawing board to the real world in record time

“It took us just 12 weeks to complete the project and one week to manufacture the concept car. Using our HP Designjet T520 ePrinter here in Barcelona, and the ePrinters in the FabCafe in Tokyo, Sao Paulo or Manchester, we could collaborate more closely by printing our in large-format plans and concepts directly over the internet. This allowed us to instantly share plans for our respective areas of expertise with absolute clarity, avoiding misunderstandings that can cost time,” says Tomas Diez, director at Fab Lab Barcelona. Development distributed between locations allowed Fab Lab to increase productivity as the project progressed round the clock by exploiting different time zones.

“Distributed design offers the unique opportunity to draw on complementary skills that you may not have in one Lab that are readily available in another. The project was complex and the teams in each location designed specific parts according to the local skill sets available. Collaboration and broader access to tools, the ability to share a print over the internet, increases the creative pool,” explains Betoldi.

Sharing ideas creates solutions for local fabrication

“Ideas are born on paper before they turn into reality. We draw, we make corrections, we design and redesign. The reliable connectivity of the HP Designjet ePrinter makes it the perfect tool for distributed workflows and Fab Lab’s distributed design and build philosophy. On our HP Designjet ePrinters all the Fab Labs could print the plans created at another Fab Lab without being concerned with platforms or software applications. As the manufacturing Fab Lab, we were able to print plans to life-size scale and use them as blueprints for positioning the manufactured parts for assembly.



“The fidelity was extremely important as it gave us the confidence to start manufacturing some parts of the car before finalising all the details in the design,” says Diez. “We were surprised by the fantastic results. The resolution was perfect,” explains Diez. All the Fab Labs printed on 36-inch HP Coated paper.

Creating seamless connections accelerates innovation

“The HP Designjet ePrinters are helping us to turn people’s ideas into real solutions. The moment you share the printed plan is a key milestone in a project. Everybody can see, touch and feel the idea that has come to life. R&D is moving beyond the conventional workspace, pushing back the boundaries that can confine traditional business models. At Fab Lab the power of innovation is that there are no boundaries - we believe the move to open source boosts innovation. Anywhere in the world, a connected HP Designjet ePrinter allows people to accurately print the large-format drawings they need without any expert knowledge of files, formats, printing or networks, or even software applications. It is a ‘democratisation’ of technology that is accelerating innovation,” concludes Diez.

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