

Application Spark Foundation Funding

Fab Lab Auckland Registered Charity

Your name

Baptiste Natali

Organisation name

Fab Lab Auckland Registered Charity

Contact email address (best one to reach you on)

jbnatali@gmail.com

Is your organisation (select one)

a charity or community organisation

Tell us about your programme, initiative or big idea including whose involved, key milestones achieved and ones on the horizon

What is the Fab Lab Network?

The Fab Lab Network was set up sixteen years ago by the centre for bits and atoms at MIT, Massachusetts, USA. It consists in a network of fabrication laboratories focused on spreading the tools and knowledge of digital fabrication to empower citizens. It currently comprises more than 1300 Fabrication Labs worldwide, all equipped with common fabrication capacities and following a charter promoting online knowledge sharing.

This approach :

- enables large-scale collaboration to solve local issues. A vast pool of knowledge generated by this global network is readily available, and fab labs have the ability to materialise these solutions locally using digital fabrication tools, local materials and local workforce.
- decreases the energy consumption generated by the relocation of goods.
- increases the resilience of the local population, active participant in the production of their manufactured environment.
- enables the design of more mindful, ecological fabrication process.

01 **DIGITAL FABRICATION LABORATORIES** ARE PLACES WHERE RELATIONSHIPS ARE SET UP TO INSPIRE PEOPLE TO TURN THEIR **IDEAS** INTO **NEW PRODUCTS**



02 **HOW?** BY GIVING PEOPLE ACCESS TO A RANGE OF **ADVANCED DIGITAL MANUFACTURING TECHNOLOGIES** AND KNOWLEDGE



FABLAB
MAKING IDEAS



03 **IT'S MORE THAN 3D PRINTING.** IT IS AN **EVOLVING SUITE OF CAPABILITIES** TO TURN **DATA INTO THINGS** AND **THINGS INTO DATA**



04 HOW WILL WE LIVE, LEARN, WORK, AND PLAY **WHEN ANYONE CAN MAKE ANYTHING, ANYWHERE?**



THE REVOLUTION IS ALREADY WELL UNDER WAY

Our initiative :

Our project is to set up the first Fabrication Lab, or Fab Lab, in Auckland, unlocking access to the potential generated by data digitalisation and connecting Auckland to a worldwide network of innovative projects. Fab Lab Auckland will raise the current level in digital literacy of young learners and unlock potential for community projects based on digital technology.

Examples of projects : <http://fab.city/>, <https://smartcitizen.me/>

The planned Fab Lab will be hosted in an outdoor community space called “the Commons”. The Commons are located in Gribblehirst Park in Sandringham, Auckland, and is run by a local charity called “Gribblehirst Community Hub”.



In practice, Fab Lab Auckland will :

- run workshops and provide access to digital fabrication tools;
- support the development of sustainable solutions, using local, upcycled and recycled materials;
- Design solutions for the development of an urban micro farm at the Commons;
- Collaborate, design and share solutions globally amongst the worldwide network of fabrication labs.

Key Milestones :

- *November 2016:*

The Fab Lab Auckland Project is accredited by the Fab Lab Network as a Planned Lab;

- *March 2017:*

Fab Lab Auckland is set up as a Charitable Trust;

- *April - July 2017:*

A business plan is drafted and receives financial support from Work and Income to purchase small fabrication tools;

- *July 2017:*

Fab Lab Auckland receives a Letter of Interest from Gribblehirst Community Hub to host the planned lab;

- *August 2017:*

Fab Lab Auckland participates in the international Fab Lab conference in Santiago de Chile;

- *November 2017:*

Fab Lab Auckland becomes a Registered Charity;
- *December 2017:*

Fab Lab Auckland runs its first laser engraving workshop;
- *January 2017:*

Fab Lab Auckland in collaboration with a local makerspace receives funding from Auckland Council Waste Minimisation Fund to develop urban aquaponic systems upcycling organic waste.
- *January - August 2018:*

Baptiste Natali, co-founder of Fab Lab Auckland, attends the Fab Academy in Barcelona, deepening his skills in digital fabrication techniques. He receives a scholarship to develop an educational tool for young learners as a final project;
- *November 2018:*

Fab Lab Auckland, with the support of the Spark Foundation, provides a set of weekly workshops covering the basics of digital fabrication at no cost, at Gribblehirst Community Hub;
- *January 2019:*

Fab Lab Auckland provides a serie of activations about digital fabrication on the Manukau Plaza in South Auckland;
- *February 2019:*

Gribblehirst Community Hub opens its urban micro-farm to the public. Fab Lab Auckland shares the designs of the aquaponic system online, free for all, to be replicated.
- *November 2019:*

Fab Lab Manukau opens and provides weekly workshops covering the basics of digital fabrication.

Describe the step change you're seeking to make, that you believe the Spark Foundation can help with

Our goal is to make the Commons a place of open-source learning for citizens, with four focuses : digital fabrication, upcycling, urban agriculture and citizen empowerment.

Firstly, we will offer after-school classes about digital fabrication for young learners. These classes will be mainly practical, fabricating objects using upcycled materials, providing a better understanding of the fabrication process and its environmental impact.

Secondly, to raise interest from citizens in digital technology, empower them to take action towards sustainable development and enliven the neighborhood, Fab Lab Auckland will regularly organise activities such as :

- repair cafe;
- fabrication workshops using materials diverted from the landfill;
- working bees to set up and maintain the community micro farm;
- hackathon using online resources to develop solutions to local needs.

Thirdly, the co-working space will be accessible to the public to develop technology with sustainable outcomes. Projects offering solutions for recycling or upcycling materials will be offered extra support.

What is required?

To set up the fabrication lab and offer one open day per week, we need:

- A minimum of 6 shipping containers offering secure indoor space to host the tools and co-working area;
- Digital fabrication tools such as laser cutter and computer-controlled milling machine. The list of tools is detailed in the monetary investment section;
- Financial support for a qualified staff member to be present, welcome and support new visitors during one open day occurring each week. This staff member will provide free after-school classes for young learners and free workshops for adults.

Quantify the monetary investment (on an annual basis)

Monetary investment for Year 1 : nzd 149,000

Monetary investment for Year 2: nzd 24,000

Monetary investment for Year 3: nzd 24,000

Monetary investment includes start-up cost, material cost and running cost to open the lab to all at no cost one day per week. The rest of the week, Fab Lab Akld will be only open to paying members and Spark staff member.

Start Up Cost :

A breakdown of the start-up cost comprises the purchase of kits to build digital fabrication machines. These machines will complete our current set of machines. Off the shelves, these tools are very expensive. Buying kits to be built on-site cuts the cost by up to 50%. The tools selected below are good compromises between reliability and affordability, and were recommended by the tool maintenance staff members of Fab Lab Barcelona. We only offer an estimate of the cost since pricing varies from one provider to another.

Estimate of Start Up Cost:

6 second-hand containers and extra cover : nzd 29,000

Cnc machine - Shopbot with cutting tools: nzd 37,000

Laser cutter - Transon with extraction unit: nzd 25,000

2 x 3D printer - Prusa MK3 with multimaterial printing capacity and spare heads: nzd 6,000

Precision milling machine - Carbide: nzd 7,000

extra computers, soldering tools and miscellaneous items : nzd 9,000

Total :

Year 1 : nzd 113,000

Note : Most of the machines selected below can be found in a single website here :

<https://www.fablabfactory.com/pages/shop>

Note 2 : I am approaching manufacturers to get better deal in exchange of promoting their products via the educational tools we are developing.

Material cost :

The Fabrication Labs will enable us to refurbish the containers and build furnitures. Locally sourced materials will be used to set up the space.

Other materials such as filaments for 3d printers, electronic components and consumables are required to run beginner-friendly workshops.

Estimate of Material Cost:

Material required to refurbish the containers (year 1) : nzd 12,000

Consumable (per year) : nzd 4000

Total :

Year 1 : nzd 16,000

Year 2 : nzd 4,000

Year 3 : nzd 4,000

Running cost for open days:

We will have one open day each week, providing a qualified staff member to run after-school classes and workshops from 4pm to 10pm. An estimated nzd 400 per day is required to provide participants access to consumables and support from a qualified instructor.

Running cost for open days :

Year 1 : nzd 20,000

Year 2 : nzd 20,000

Year 3 : nzd 20,000

Time frame investment required

3+ years

Outline how success will be measured

The success of after-school classes will be monitored measuring the attendance rate and feedback provided by both parents and children. Classes will be considered successful when the attendance rate raises above 80% of the maximum accommodation capacity of the Fab Lab, and overall feedback provided reaches 4 out of 5.

Similarly, the success of workshops will be monitored using attendance rate and feedback provided by participants.

The success of the setup of the micro farm will be measured by the variety of working prototypes developed and their respective food production capacity. These working prototypes will be in competition with a normal raised-bed and must produce a better output using an identical footprint.

The success of hackathon and other group projects will be set up according to their focus. They must however share detailed online documentation enabling other fab labs to replicate their results.

Partner and collaboration - are you already working with other groups or partners?

Yes

If yes, we're keen to understand those involved and the role they play

The Gribblehirst Community Hub, host and main collaborator:

The Hub currently holds the lease of the Commons and has offered to host the Fabrication Lab at Gribblehirst Park. In return, members of the Hub will get access to the tools to fabricate what the space requires: furnitures, sensors and lighting using recycled material.

<https://ghub.nz/>

The Fab Lab Network, including Fab Lab Wellington and Fab Lab Barcelona:

Fab Lab Barcelona is the first and biggest Fab Lab set up in Europe, acting as a global coordinator for the worldwide network. It has led numerous researches in sustainable development, and possesses a campus entirely dedicated to green technology, developing hydroponic and aquaponic systems. It is currently one of the seven research centres developing an open-source robotics platform for micro-farms under an EU funded research. The co-founder of Fab Lab Auckland is investigating which projects will best fit the requirement of the Commons. The objective is to build a strong collaboration between both labs, making best use of digital fabrication to share designs regardless of distances.

<https://fablabbcn.org/news/2017/08/31/romi.html>

Fab Lab Wellington offers technical support to develop other Fabrication Labs in New Zealand and Australia. Fab Lab Auckland will benefit from their expertise and local network to develop best management practices.

<https://www.fablabwgtn.co.nz/>

Other groups involved:

Hackland is a local, grassroot makerspace. We are currently collaborating to develop a working prototype of aquaponic system which doubles as a waste minimisation system for organic waste.

<http://hackland.nz/>

The Southern Initiative has expressed interest in hiring our expertise to run digital fabrication workshops in South Auckland, gaging interest from the local population. If successful, we will partake in setting up a second Fab Lab in South Auckland.

<https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/place-based-plans/Pages/southern-initiative.aspx>

Are there engagement opportunities for Spark people, such as volunteering? We're keen to hear how Spark people can get involved, where useful and relevant

Yes

If yes, please provide a high-level outline of these opportunities

The implementation of a Fab Lab will nurture the creativity and technical abilities of the staff members from Spark.

They will be offered free access to the fabrication tools, free tutorials about their correct use and storage space for prototypes. They will also be invited to attend monthly talks about digital technology, networking evenings, hackathons, and other team-building exercises. Finally, they will be incentivised to partake in community projects, using our co-disciplinary working space to team up with professionals with varied backgrounds.

This will enable them to leverage their current knowledge and expanding skill sets in digital technology to participate in the development of a citizen empowerment project impacting the whole Auckland region.

Alternatively, staff members from Spark will be invited to participate in the hand-on fabrication of an on-site micro farm. This project will be an opportunity to get an understanding of off-soil growing production method such as hydroponic and aquaponic, and contribute to the birth of the first urban micro farm in Auckland.

How else could Spark Foundation and Spark contribute? please specify

To further fund the development of community projects, we will use the Spark crowdfunding platform "GiveaLittle", and Spark "Give" universal payroll giving program.