



## What is a Fablab?

A fab lab (fabrication laboratory) is a small-scale workshop offering (personal) digital fabrication.



## What is a Fablab?

A fab lab is typically equipped with an array of flexible computer-controlled tools that cover several different length scales and various materials, with the aim to make "almost anything".

This includes technology-enabled products generally perceived as limited to mass production.



# What is a Fablab?

While fab labs have yet to compete with mass production and its associated economies of scale in fabricating widely distributed products, they have already shown the potential to empower individuals to create smart devices for themselves.

These devices can be tailored to local or personal needs in ways that are not practical or economical using mass production.



## What is a Fablab?

The fab lab movement is closely aligned with the DIY, the open source hardware and the free and open source movement, and shares philosophy as well as technology with them



# Fab labs puts ideas into form



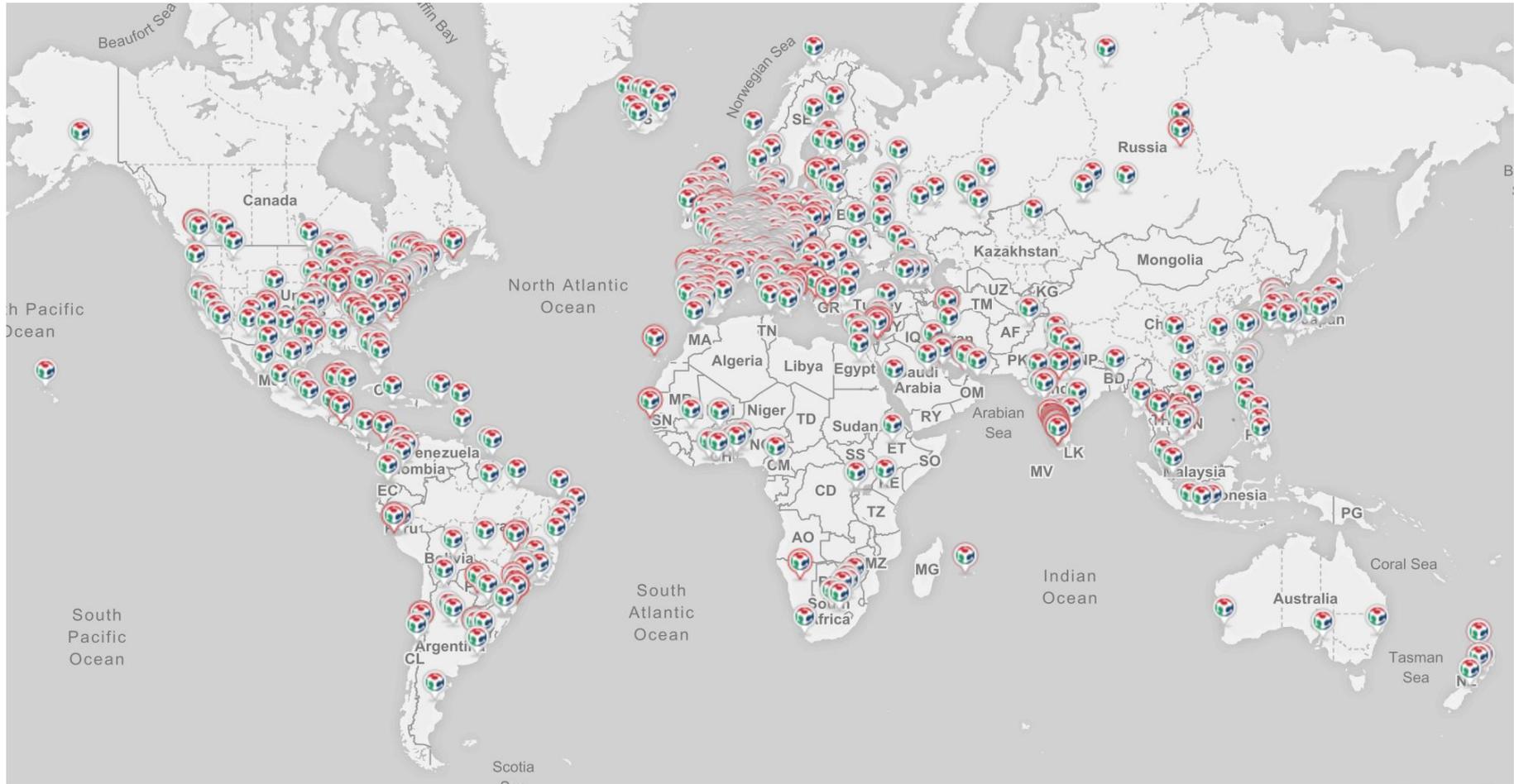
## List of Labs

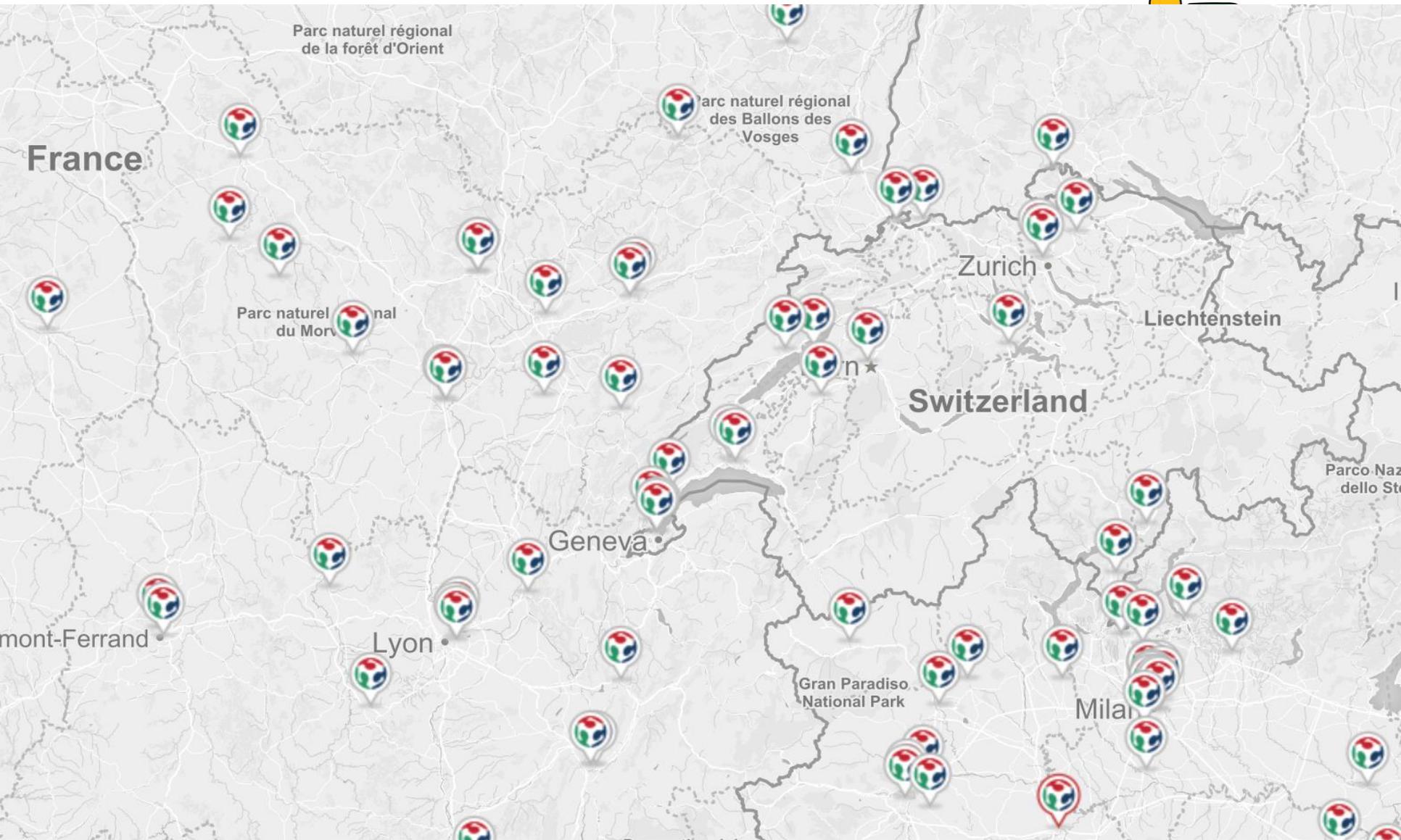
MIT maintained a listing of all official Fab Labs, worldwide, until 2014. Nowadays listing of all official Fab Labs maintained by the community through website [fablabs.io](http://fablabs.io).

As of October 2016, there were total 713 Fab Labs in the world in total.

Currently there are Fab Labs on every continent except Antarctica.









# Equipment

Flexible manufacturing equipment within a fab lab can include:

- rapid prototyping: typically a 3D printer of plastic or plaster parts
- 3-axis CNC machines: 3 or more axes, computer-controlled subtractive milling or turning machines
- Printed circuit board milling or etching: two-dimensional, high precision milling to create circuit traces in pre-clad copper boards[6]
- Microprocessor and digital electronics design, assembly, and test stations
- Cutters, for sheet material: laser cutter, plasma cutter, water jet cutter, knife cutter.



## 7. Fab Lab inventory list

### START UP INVENTORY - FABLAB

This inventory is continuously evolving. The ultimate goal is a Fablab inventory being able to reproduce itself. Below you will find the basic Fab Academy ready inventory. Prices are excl. taxes and subject to change

incl. software | \*\* incl. shipping from USA.



#### 1. Laser cutter – Epilogue Laser 60 or 100Watt

A 2d machine that can cut through and engrave all kinds of materials very precisely. Acrylic, Wood, fabric etc. To build 3 dimensional objects, jewelry, fashion items, stamps, lamps, signs and many more.

Price range €20.000 – 30.000



#### 2. Precision milling machine – Roland monofab SRM20

A 3 axis milling machine for milling 3 dimensional objects, often used for molding and casting forms. It is also possible to make 3d scans, and is often used to mill circuit boards.

Price €4.800



#### 3. Vinyl Cutter – Roland camm1 GX24

A sign cutter to produce adhesive labels, signs, antennas etc. Cuts through plastic foils, copper foil, paper, cardboard etc.

Price €2.450



#### 4. Milling machine – Shopbot PRS 96x48 alpha

A big 3-axis milling machine to produce big things, like furniture, housing, tables chairs etc. Mills also steel, aluminum and other non ferro material.

Price range €18.000



#### 5. Video conferencing system

The video conferencing system connects all Fablabs around the world, allowing international knowledge sharing in a very quick and intuitive way. All Fab Academy classes about digital fabrication are thought through this system.

Nowadays, these expensive dedicated systems are redundant. We use software solutions with HD webcams and noise canceling microphones. Price €100 – 2.000 according to choice multiple screens and webcams

### OPTIONAL EQUIPMENT

We recommend this equipment to enable fabrication of metal and textiles



#### 6. Precision metal lathe/mill combi machine – Wabeco

A small metal precision lathe/mill combination machine that allows fabrication of round and squared or a combination of the two in metal, brass, aluminum and other non ferro material Note: This machine needs additional knowledge in metal machining for safety.

Price range 2.000 – 4.000 €



#### 7. Sewing/embroidery machine Brother Quattro 6000D

A brand new very advanced sewing/embroidery machine that can make precise embroidery and various sewing stitches. Comes with preprogrammed functions and a large display

Price range: 8.000 € (entry level machines are available for less than 1.000 €)



- CREATIVE DISCIPLINES
- PEOPLE FROM OVER 100 COUNTRIES

P<sub>H</sub> A<sub>R</sub> D<sub>E</sub> A<sub>g</sub> F<sub>E</sub> C<sub>i</sub> S<sub>O</sub> B<sub>R</sub> P<sub>EN</sub>...

LAB SPONSORS



DEDICATED "LABS" OUT OF THE BOX // COLLABS



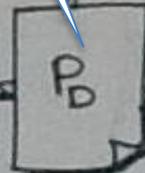
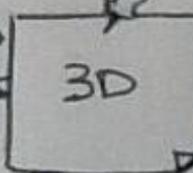
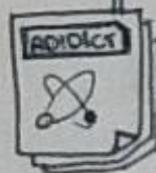
## PROTOTYPING / MAKER esprit 'Maker'

Tools and machines to make ideas tangible

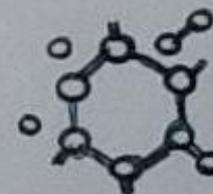
Outils & machines (3D,...) pour rendre les idées tangibles



- PLATFORMS TO "ACCELERATE" CREATIVE TALENT
- INNOVATIVE CONTENT & STORIES



Creativity in Chemistry



- CREATIVE DISCIPLINES
- PEOPLE FROM OVER 100 COUNTRIES

P<sub>H</sub> A<sub>R</sub> D<sub>E</sub> A<sub>g</sub> F<sub>E</sub> C<sub>i</sub> S<sub>O</sub> B<sub>R</sub> P<sub>EN</sub>...

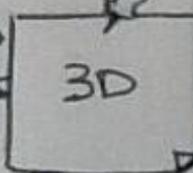
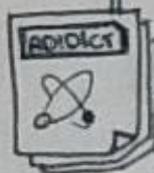
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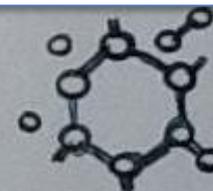
## PROTOTYPING / MAKER *esprit 'Maker'*

Tools and machines to make ideas tangible

*Outils & machines (3D,...) pour rendre les idées tangibles*



*Creativity in Chemistry*



## > Fab Lab as a tool for cultural transformation

work independently from department of site

ideas from everywhere

Do it together

‘Fablabs can organise themselves’



## Work on the winkel

- Shift from digital fabrication to collaborative technology to create value through mass collaboration
- respect for machines hardware but also soft ware/soft skills
- focus more gender equality
- sharing / protection of knowledge
- open up towards kids, schools



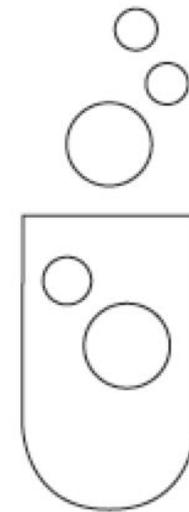
# Introducing a LAB culture (company)

Why turn towards a LAB culture?

- Enhance collaboration
- Accelerate & discover talent
- Create inspirational environments
- Create inspirational encounters
- Mix skills and passion
- Cross borders to think out of the box
- Increase innovation funnel
  - Introduce a dynamic and engaged company culture as opposed to a static and passive

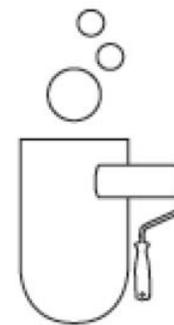


*Central to it all: the individual  
with his own identity, skills,  
passions.  
> basic element of the whole  
navigation system.*



*Profiling system helping to define people's skills and personal drive.*

- > Professional skills*
- > personal passions*



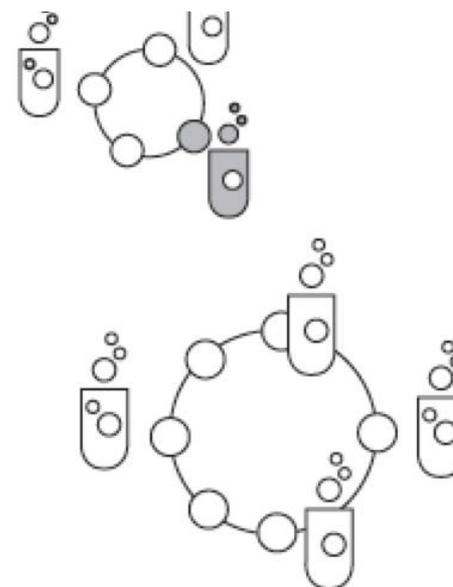
profession/skills

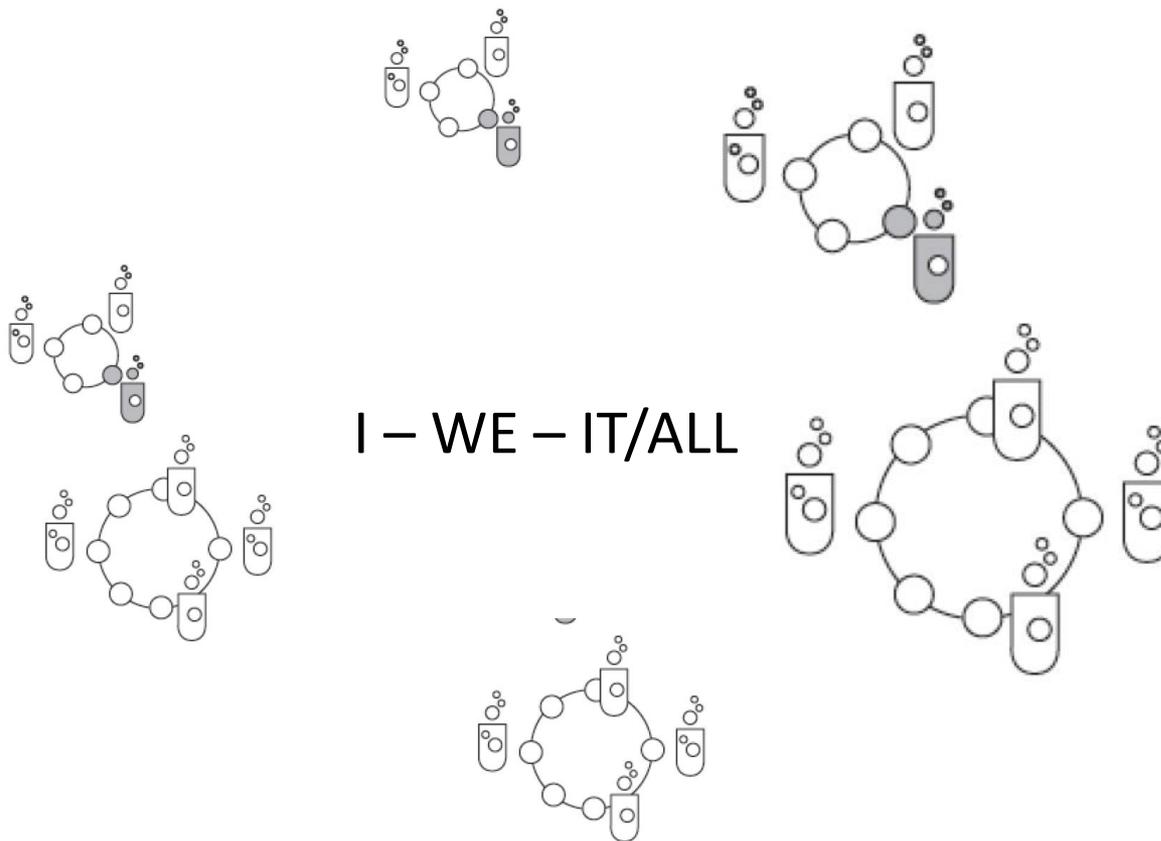


drive & passion(s)



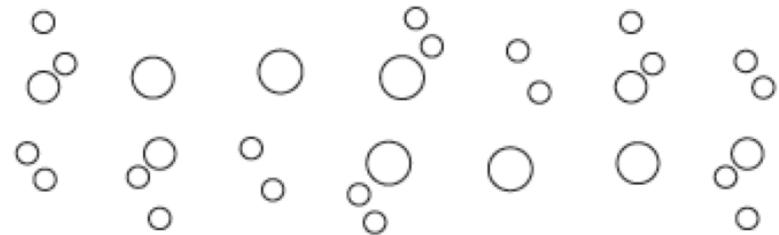
*Working in group:  
organic  
representation of circular group  
activities*





## Behaviour

*Bubbles represent creativity,  
Processes need to allow for inno-  
vation and allow for “controlled  
creative chaos.”*



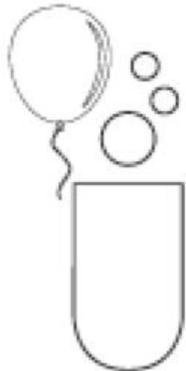
look and feel:  
can be multicolour, styles,



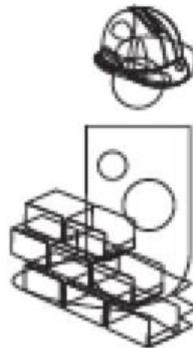
Tools



Events



Spaces



Programs



Communication



# 1. Mindset

## CULTURE

Establishing a Fab culture within Saint-Gobain needs strong commitment of individuals, impersonating the Saint-Gobain vision, and a surrounding group of ambassadors or change agents within Saint-Gobain that adopt the idea and help to bring it to life.

This phase is focussed on social engineering and establishing common ground in terms of spirit, creativity, energy and open communication. The aim is to stage Fablab as a safe and playful space in which all employees coming from different parts and roles in the organization feel comfortable and equal to their colleagues. Establishing the right mindset and keeping it alive is essential to the success of Fab culture and requires continuous attention. We believe this is done through creating a large group of ambassadors and on creating appealing Fablab activity programs through which the group of ambassadors will grow.

## EXPERIENCE

First step into Fablab and Fab culture is to visit a Fablab in your neighbourhood. Simply get a feel of the people, the culture, their activities, their input and output. To experience the effect of co-creation and digital fabrication tools request to participate in a small workshop.

## COLLABORATION

Collaboration starts with defining the challenges ahead together. What are the biggest challenges according to you, according to your peers? Are you on the same page? Are there more sides to the same coin?

Through an in-depth experience like a bootcamp one can really dive into the challenge establishing common ground and designing solutions for the different aspects such as room design, programme or communication strategy. The aim of a Fablab and Fab culture bootcamp is to:

Provide a clear picture of the scope, practicalities and actions of establishing a Fablab.

Practice what you preach, using and learning about Fablab and co-creation techniques in the process.

To establish a substantial group of ambassadors that pave the way for peers and colleagues.



Essential to the bootcamp set up is the guidance of Fablab experts on the one hand and establishing ownership of the results by employees on the other. Therefore a bootcamp is ideally split into a common ground and ideation phase run by Fablab experts and a phase that focuses on transferring the ideas into concrete actions and action owners. This second phase needs to be run by Saint-Gobain facilitators.

To be successful a substantial group of employees from throughout the organization need to participate in the bootcamp.

.....  
Tools to create the right mindset: Concept story puzzle, Portrait drawing, lego exercise, value ladder. See chapter 6



## 3. Program

*The Fablab as physical space needs programs that activate its potential. We defined four distinct programs with specific goals: (1) Skills- learning how to operate and use the Fablab, (2) Mindset - changing the culture, engaging people, (3) Bizz - business and product innovation and (4) Open – connecting to the outside world. Each of these programs are based on specific formats that help to define the target, engage people and facilitate the process and outcomes. This list is neither exhaustive nor prescriptive*

### SKILLS PROGRAM

Learning how to operate and use the Fablab.

#### Fab Pro

The aim of this program is to turn the core Fablab team into experts in Fablab technology and methods. Fab pro is an intensive training for Fablab ambassadors, Fablab management & facilitators team. 4 x 2 days 5 -10 participants

#### Fab Los!

The aim of this program is to have 60-80 people become ambassadors and have basic Fablab skills in basic skills on code, sketch, 3d print, design, plan, document, safety. The group should be diverse including key figures from all disciplines from through out the organisation. 2 days per month. 10 - 15 participants

#### Fab Modules

The aim of this program is to deepen the knowledge on specific machines, design, software, programming and materials. The modules are at the level of the official 20 week/3 days a week Fab Academy program starting in January each year. 1 - 3 day program, depending on topic. 5 - 10 participants

### MINDSET PROGRAM

Changing the culture

#### Fab Lunch

To aim of this program is to gradually introduce Fablab to all employees with a low entry threshold. Employees can walk around, ask questions or participate a one-hour workshop to have a taste of the Fablab. Lunch is included.

One afternoon, weekly. 12.00 - 14.00. 15-20 visitors.

#### Play

Play activities focus on engaging people by playful workshops. Participants make a design of a Saint Gobain 350-years souvenir, fab a bicycle with bearings inside, fab a 'Osterhase' or Christmas surprise for their kids. Activities are scheduled during regular scheduled open days, afternoons or lunch sessions. 10-15 participants

#### Family

The aim of the family program is to engaging employees through inviting their families. Together, kids, parents and grandparents fab creative Fabschool projects such as creating your own mini computer or making a battery with mud. Wednesday or Saturday afternoon. 10-15 participants



## BIZZ PROGRAM

Product innovation

### Hackaton

The aim of this program is to stimulate innovation on specific topics in interdisciplinary teams under the pressure of limited time. 2 days hackaton, total running time 2-3 months.

### Challenges

The aim of the challenges program is stimulate interdisciplinary thinking and problem solving through. Challenges are organized by sales, marketing or R&D managers. Participants are selected and invited by the challengers. Challenges can use the format of a hackaton. 1-3 times a month, depending on the initiative of the challengers. 5-10 participants.

### Neue Kombinationen

The aim of Neue Kombinationen is to stimulate crossover product development between divisions, using materials and expertise from across Saint-Gobain. Workshops are organized with people from inside and outside of Saint Gobain. 5-10 participants.

### Growing innovation / spin off

Growing innovation is a support program stimulating employees to come up with new ideas and in company spin offs. 5-10 participants.

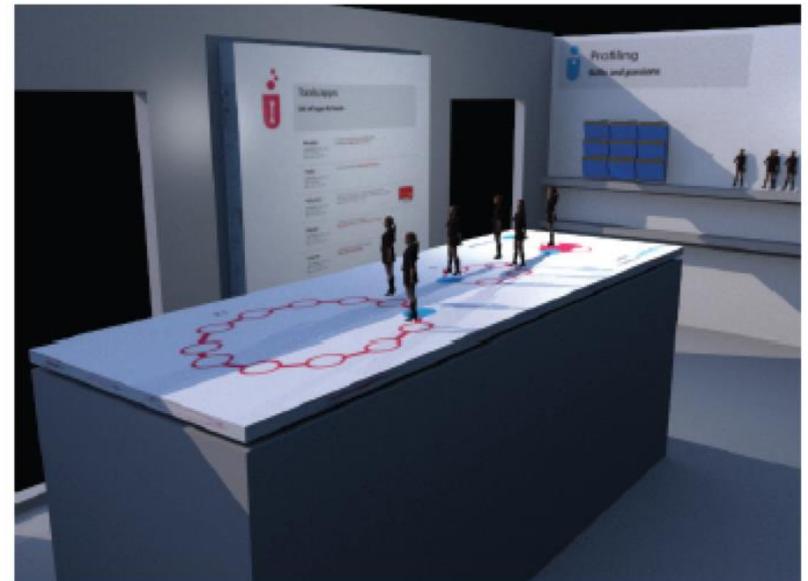
### Incubate program: Talent days

Through the talent days Saint-Gobain opens its facilities to the outside world on a regular basis. The program is set up together with HR and aims to attract talented students to the company. Weekly Friday afternoons. 5-10 participants.

.....

*Tools to create programs: Brainstorming, clustering, timeline mapping, collecting feedback, program canvas. See chapter 6*





## Profiling Wall

Tools to profile people

- ID cards
- Table of human capabilities (skills & passions)

- collection of ID cards
- rolodex
- 3D printed figures of all employees
- open door to other communities.

3D printed in Fab Lab

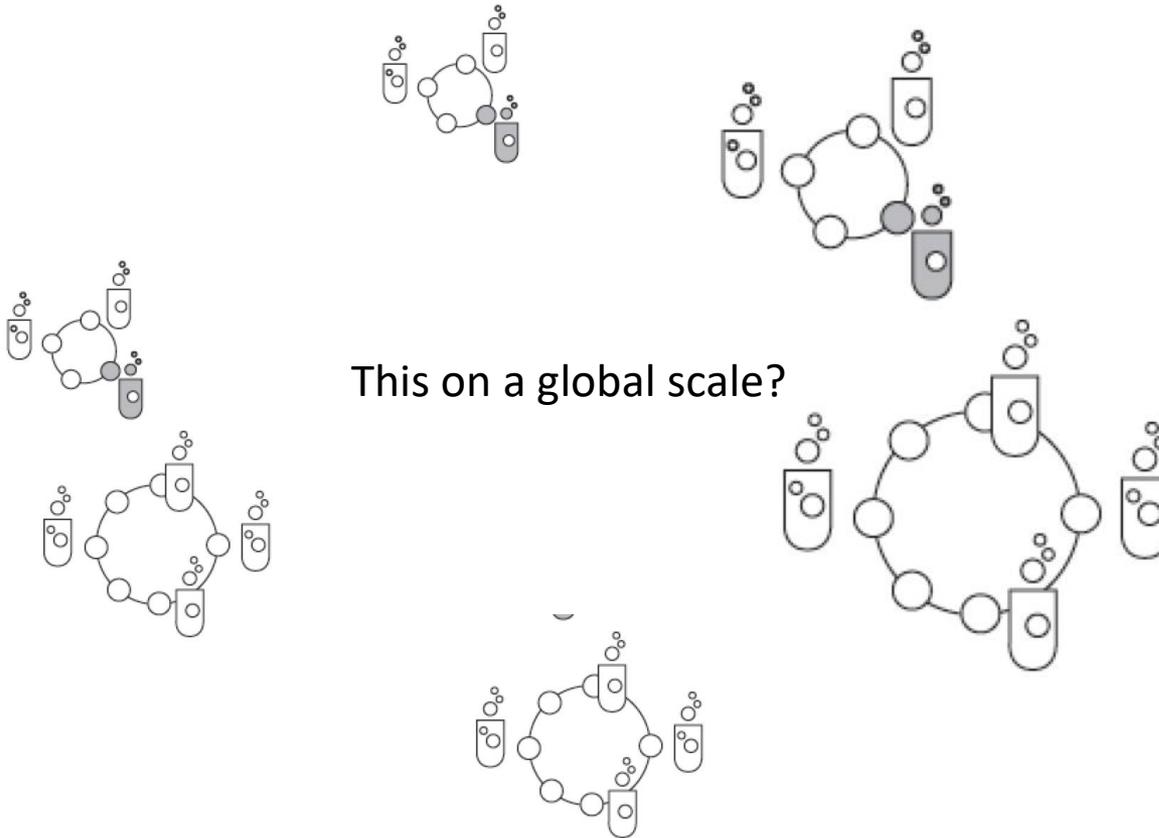


## Tools & App wall

Tools to profile people  
overview & test of apps

Digital screen showing Yola app or customized Saint Gobain collab app.





ADDICT



ONLY ONE BRAND WORTH WORKING FOR.



**collective intelligence**

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40

**LAB PROJECT** | **PLAB**

TITLE

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DESCRIPTION

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CATEGORY

Public - very intense

PLAB

Crowdfunding

Collaborative intelligence

LINK TO OTHER LAB

SEARCH/RESPONSE

MAIN SDG

Project Description

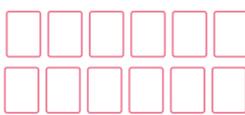
**Link to the SDGs**



**your ideas & comments**

notification space

**Link to Creative Disciplines**




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