

# Report on FAB13

## 13<sup>th</sup> Annual International Fab Lab Conference

### (Santiago de Chile, 31 July - 6 August 2017)

SANTIAGO, CHILE

31 JULY-6 AUGUST



[www.fab13.fabevent.org](http://www.fab13.fabevent.org)

Koppelting, Amersfoort, 26 August 2017

Pieter van der Hijden

[fablab@sofos.nl](mailto:fablab@sofos.nl)

Koppelting, Amersfoort , 21-27  
August 2017

# Metadata

**Title – Report on FAB13 – 13th Annual International Fab Lab Conference, Santiago de Cile, 31 July – 6 August 2017**

**Author(s)** - Pieter van der Hijden - The Netherlands & Suriname ([pvdh@sofos.nl](mailto:pvdh@sofos.nl))

**Context** – Koppelting, Amersfoort, 21-27 August 2017

**Purpose** – Give an overview, references and food for thought on actual developments in the global fab lab community and the outcomes of its 13<sup>th</sup> annual conference

**Time – 45 minutes**

**Requirements** – Projector, computer

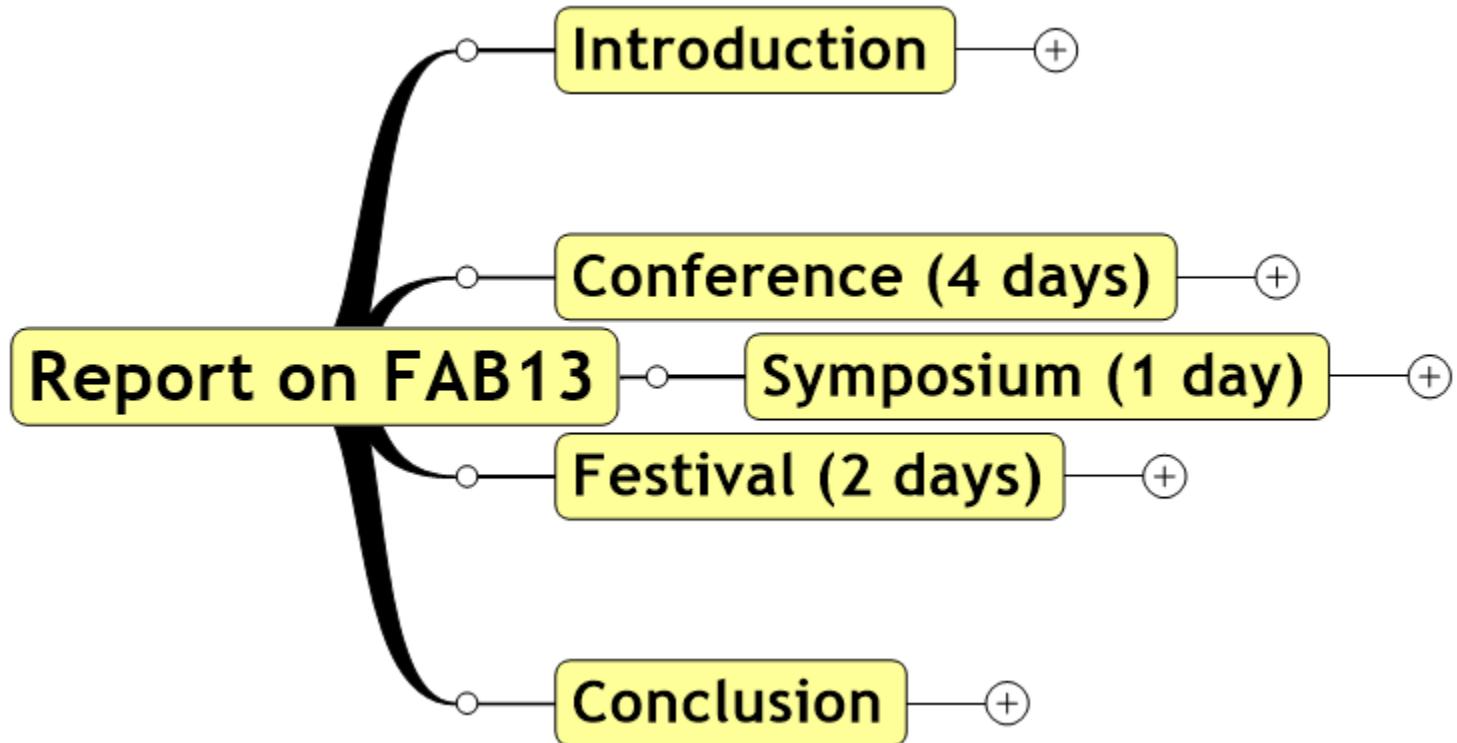
**Keywords** - fab lab, maker movement, future, policy, vision, mission, sustainable, gaming

## Acknowledgements

- Documentation on the UN Sustainable Development Goals / Objetivos de Desarollo Sostenible; <http://www.un.org/sustainabledevelopment/>
- The Fab Lab (FABrication LABoratory) concept was developed by Neil Gershenfeld, director of the [Center for Bits and Atoms \(CBA\) at the Massachusetts Institute of Technology \(MIT\)](#)

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# Agenda



# Introduction

Pieter van der Hijden

- Consultant in ict-for-development
  - Gaming, Making, Learning
  - <http://www.sofos.nl>
- Fab Lab Suriname
  - <http://fablab.sr>
- STEM-activities teacher training  
<http://bit.ly/ictdag31-stem>
- Fab Lab Life Cycle Workshop
  - <http://bit.ly/fablablifecycle>
- Fab Lab Safety Game
  - <http://bit.ly/fablabsafetygame>
- FAB13: Workshop on Fab Labs and Sustainable Development Goals
  - <http://bit.ly/fab13-sdg>



Children Museum Villa Zapakara, Paramaribo, Suriname

fablab@sofos.nl

# Introduction



Source: Wikipedia

# Introduction

## Chile

- 1970 developing country
  - Low technical infrastructure
  - Pres. S. Allende introduced cybernetics in government
  - Stafford Beer and young creative team from Chile
  - **Cybersyn project**
- 1973-09-11 coup d'état
  - Project destroyed (and much more)
  - Many intellectuals scattered over the world
- 1973-1990 military government
- 1990 transition to democracy
- 2013 “high income economy”
- 2017 seat of FAB13 “Fabricating Society”; 7 fab labs



Cybersyn project; back cover from “Platform for change” by Stafford Beer

fablab@sofos.nl

# Introduction

- Conference (4 days)
  - Morning: plenary
  - Afternoon: workshops
  - Evening: super fab lab
- Symposium (1 day)
- Festival (2 days)

Website:

- <http://fab13.fabevent.org>

Schedule:

- <https://fab13.sched.com/print/all>

Repository:

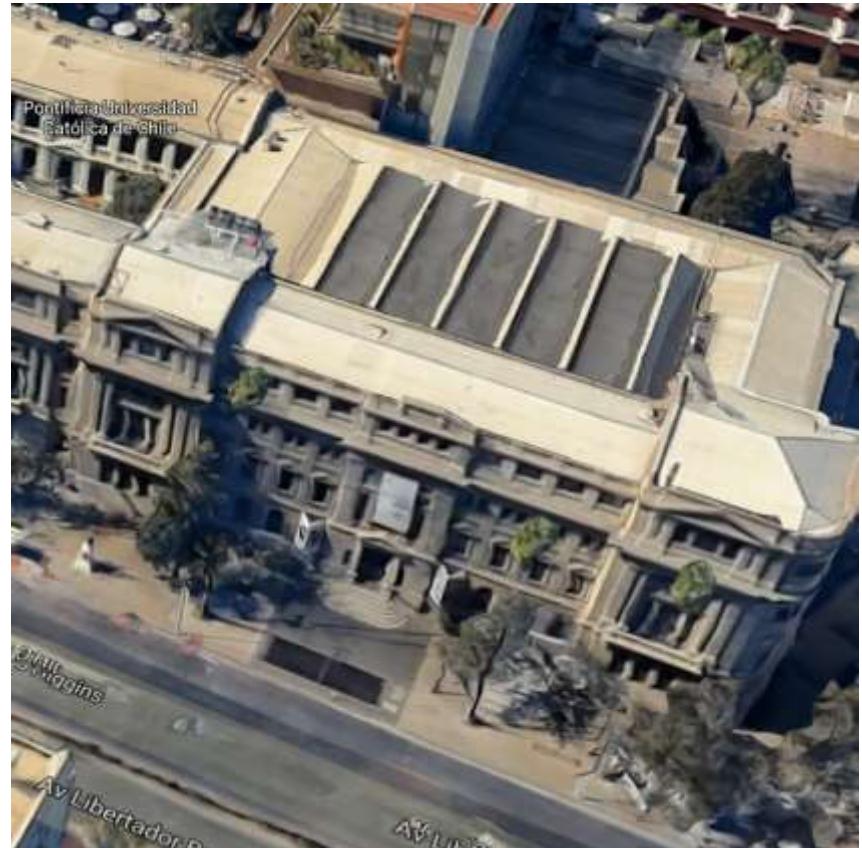
- <http://gitlab.fabcloud.org>

Magazine:

- [http://fab13.fabevent.org/fab\\_13\\_chile\\_magazine.pdf](http://fab13.fabevent.org/fab_13_chile_magazine.pdf)



# Conference (4 days, 600? participants)



Centro de Extensión Pontificia Universidad Católica; Picture: Google Maps

# Conference (4 days, 600? participants)



The Super Fab Lab

Koppelting, Amersfoort , 21-27  
August 2017

[fablab@sofos.nl](mailto:fablab@sofos.nl)

# Fabricating Society

## the conference theme



**CITIES**

Can cities return to producing their own objects and find solutions to their own needs?

+more



### HOUSING

How can we provide solutions to the housing problem that exists in Latin America?

+more



### INNOVATION

How can Fab Labs challenge conventional production schemes and be an innovation complement to the industry?

+more



### ENERGY AND ENVIRONMENT

Chile is home to two of the most polluted cities in Latin America.

How can the country's clean energy resources be positively put to use?

+more



### EDUCATION

How can fab labs empower citizens in Latin America to find local solutions to their local challenges?

+more



### DECENTRALIZATION

With the objective of amplifying the impact of Fab 13 this year we extend its reach to the regions!

+more



### DECENTRALIZATION

Given Chile's geographic extension and the gradual growth of each of its regions, Santiago, the capital, concentrates practically 40% of the total population. As this will be an event of tremendous public interest, on both a national and international level, and with the objective of amplifying the impact of this meeting, we have decided to extend its reach to the regions, creating the Off Lab, in which various members of Fab Labs' world network will travel to some of the country's regions to develop activities, workshops, talks and to participate in regional festivals.

#### SPEAKERS

To be announced

#### ACTIVITIES

To be announced

X

### Research book: Fabricating Society

- [https://issuu.com/dmoyanod/docs/libro\\_papers\\_digital](https://issuu.com/dmoyanod/docs/libro_papers_digital)

# Challenge

## Challenge on Fashion and Assistive Technology

- Demonstrate power of creation
- Visionary prototypes and innovative concepts
- Prescribe impact of wearables, digital fashion, and assistive technology, through digital fabrication and global collaborations



# State of the community

- State of the fab lab network
- Neil Gershenfeld:
  - In 10 years 1000 fab labs
    - BE 19, DE 46, LU 2, NL 32
  - In 20 years 1,000,000 fab labs
  - Fab lab ecosystem will look like internet ecosystem
    - Few persistent organisms
    - Ever growing number of nodes
- Not mentioned this time:
  - Fab lab power of ten
  - Fab charter
  - Common set of machines
  - Free access



Number of fab labs: 1173

- <http://fablabs.io>

Number of innovation spaces (incl. fab labs): ~6000

- <http://anansegroup.com/mapping.html>

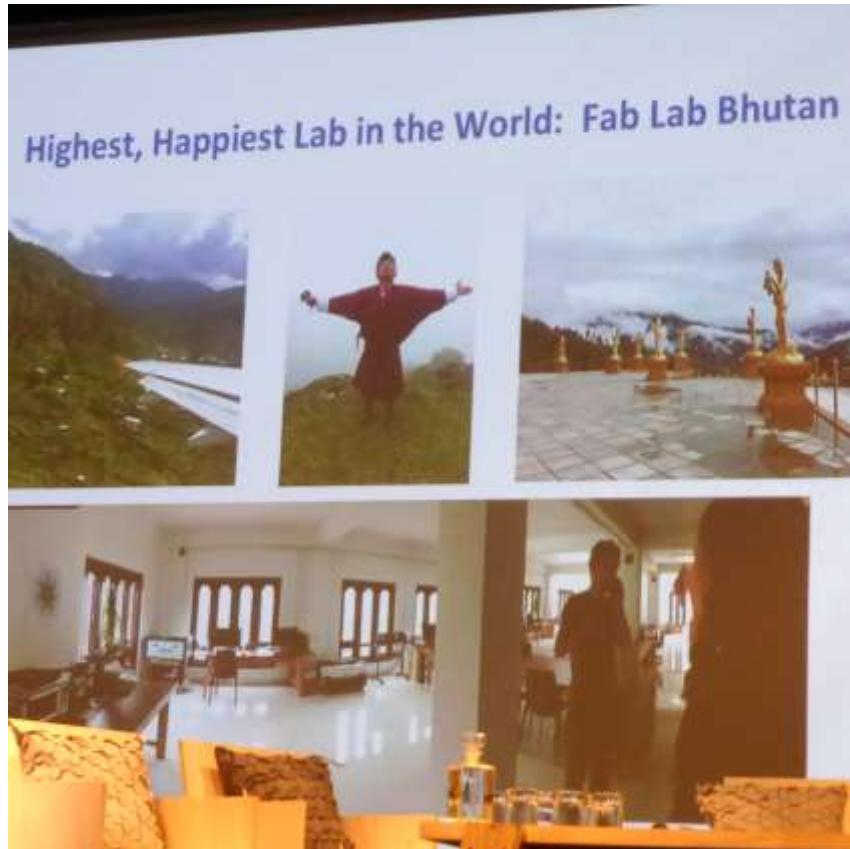
Fab Foundation

- <http://fabfoundation.org>

# State of the community



# State of the community



Recent MIT PhD  
Nadya Peek

- Making Machines that Make: Object-Oriented Hardware Meets Object-Oriented Software
- <http://infosyncratic.nl/peek-making-machines.pdf>

# State of the community

The screenshot shows the homepage of The Fab Foundation. On the left, there's a sidebar with portraits and names of team members:

- Sherry Lassiter, President
- Sonya Pryor-Jones, Chief Implementation Officer
- Luciano Betoldi, Director International Operations
- Jean-Michel Molenaar, Academany International Projects Consultant

The main content area features the foundation's logo and the text "THE FAB FOUNDATION". Below this is a banner with the text "Open-Source, Open Resources" and a photograph of a busy fab lab. To the right, there are profiles for several individuals:

- Pamela King, Fab Administration
- Jean-Luc Pierite, International Procurement And Logistics Manager
- Matthew Stuart Wade, Fab Lab Manager, Tampa
- Brian Purvis, Manager of Instruction GE Brilliant Career Lab

<http://fabfoundation.org>

# State of the community

**THE FAB FOUNDATION**

**How do we serve?**

Support FABX, the Fab Lab Network Annual Meeting

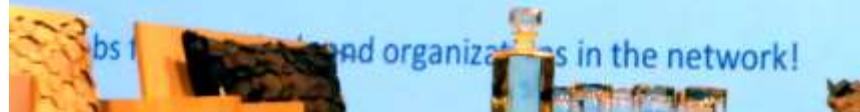
Procure, install and train for new Fab Labs

Support Fab Academy Program

Fiscal Sponsorships

Organizational support for regional and global programs  
In the Fab Lab Network

Build new programs for the network



...  
ubs f... and organizations in the network!

# State of the community

The slide features a blue background with a white sunburst logo in the top left corner. The title "THE FAB FOUNDATION 2.0" is at the top center. Below it is the subtitle "Support growing networks of Fab Labs for education and economic development". A section titled "Chevron Program" contains a bulleted list of achievements. To the right are two photographs: one showing two people working at a table with electronic components, and another showing a display board for a "FAB LAB" at the "PERMIAN BASIN AT ODESSA, TEXAS".

- Local Investments have added 5 Mobile Fab Labs for a total of 15 Labs
- 12,397 direct beneficiaries and 8,120 indirect beneficiaries
- Female participation 44.1%
- Professional Development with 641 teachers, with 3,622 training hours
- \$1.37 Million in additional funds and \$716K in-kind contribution to support 15 Fab Labs from other sources

The Intermediate Unit 1 / Chevron / Fab Lab, <https://www.iu1.org/fablab>

# State of the community



# State of the community

**DEVELOPING PROGRAMS**

*Scaling a Community of Practice  
for Education in STEM: SCOPES (df)*

- Provide access to existing curricular activities
- Develop new digital fabrication curriculum
- Develop associated Teacher Professional Development
- Provide platform for archive, exchange, and critique
- Evaluation
- Support Centers for Excellence for scaling labs and TPD

**Chevron**

**GE**

**GE Foundation**

# State of the community

## Phase I Team

Barcelona Fab Lab

Tomas Diez, Massimo Menichinelli,

Gui Seiz and Lucas Pena

Website development

David Cavallo

Program architecture development

Matt Chalker

Digital fabrication and network outreach

Andrea Fields

Lesson testing and validation

Becky Gaylord

Communications

Melvin LaPrade

Standards and pedagogy

Danielle Martin

Project coordination and management

Liz Whitewolf

Lesson testing and validation



# State of the community

- Pitches for FAB15:
  - Canada (21), Egypt (9),  
~~Georgia (25)~~, Rwanda  
(3)\*, Taiwan (13), UAE  
(6)

(\*) = # of fab labs; France (151)

## Outcomes:

- (FAB14 – 2018 – France)
- FAB15 – 2019 – Egypt
- FAB16 – 2020 - Canada



# Workgroups



# WG1: FabAcademy and Academany

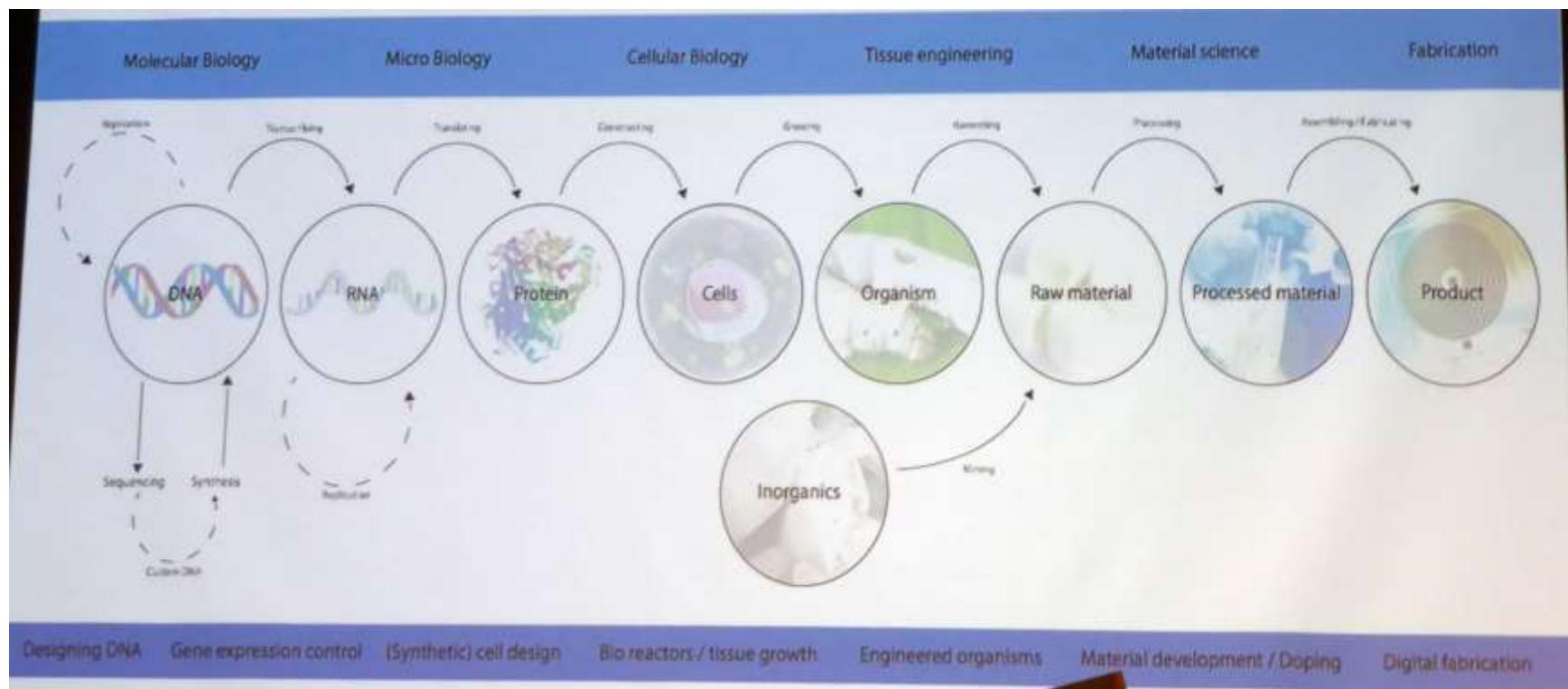
Implementation issues and instructors  
training on:

Academany (<http://academany.org>)

- Fab Academy (before: How to make (almost) anything)
  - <http://fabacademy.org/>
  - <http://archive.fabacademy.org>
- Bio Academy (before: How to grow (almost) anything)
  - <http://bio.academany.org/>
- Fabricademy (textile)
  - <http://textile-academy.org/bootcamp/>
- Fab Academy X - Adaptation to local ecosystems, and as such unique each time
  - <http://archive.fabacademy.org/fabacadeemyx/preacademy2017/>

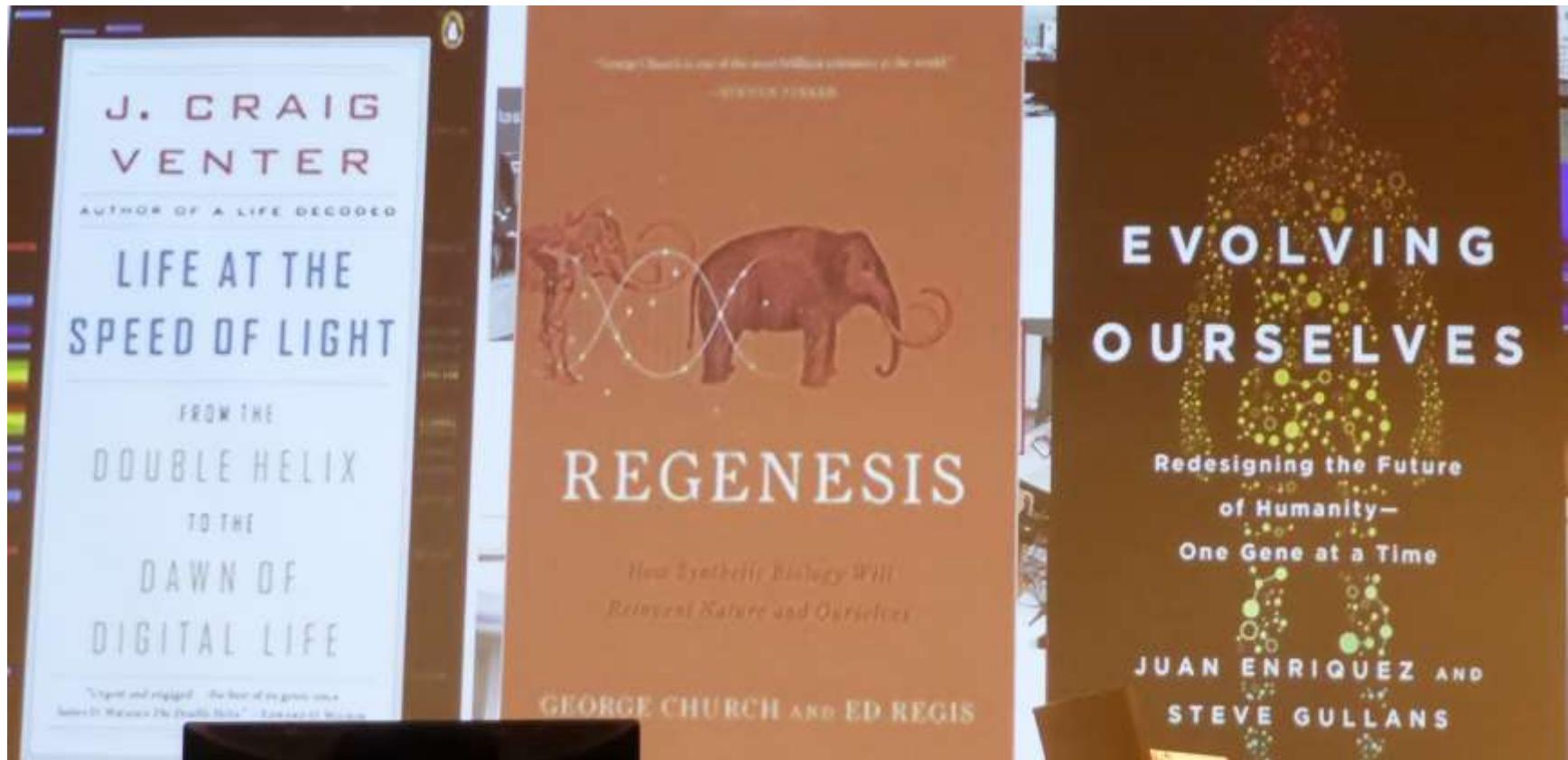


# WG1: FabAcademy and Academany



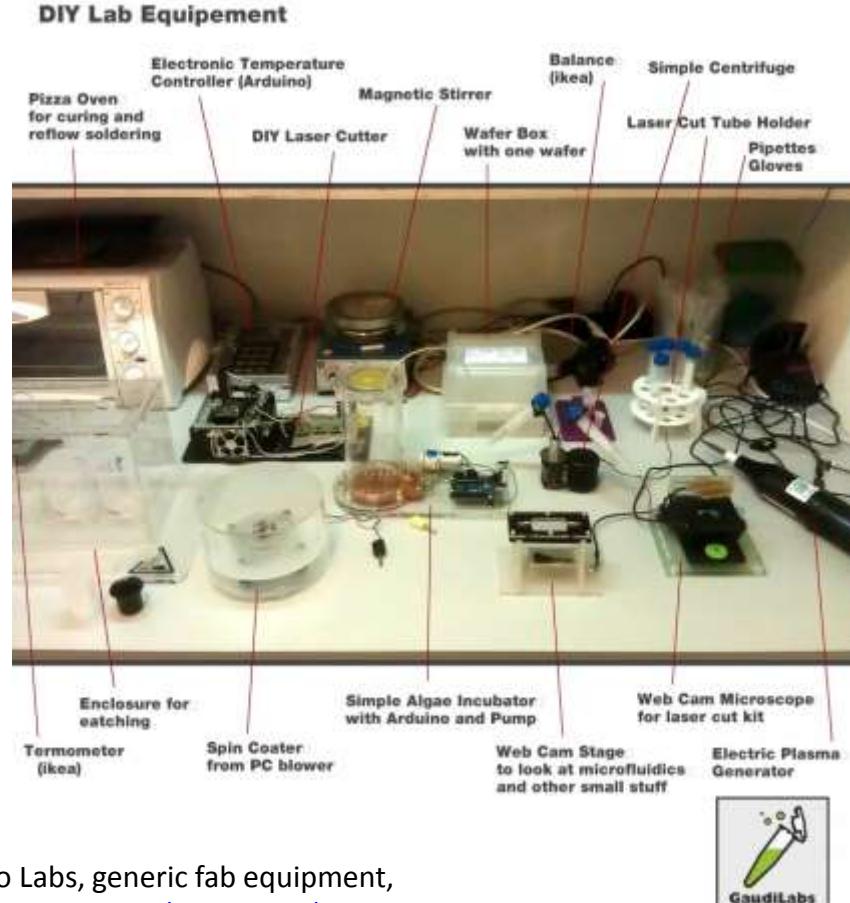
Integrating Bio and Fab

# WG1: FabAcademy and Academany



Books used for Bio Academy

# WG1: FabAcademy and Academany



# WG2: Mobile Labs and Network

- Sharing experiences
  - Bootstrapping Fablabbing in Egypt
- Creating network
  - Robert Garita, Fab Lab Veritas, Costa Rica,  
<http://fablab.veritas.cr/>



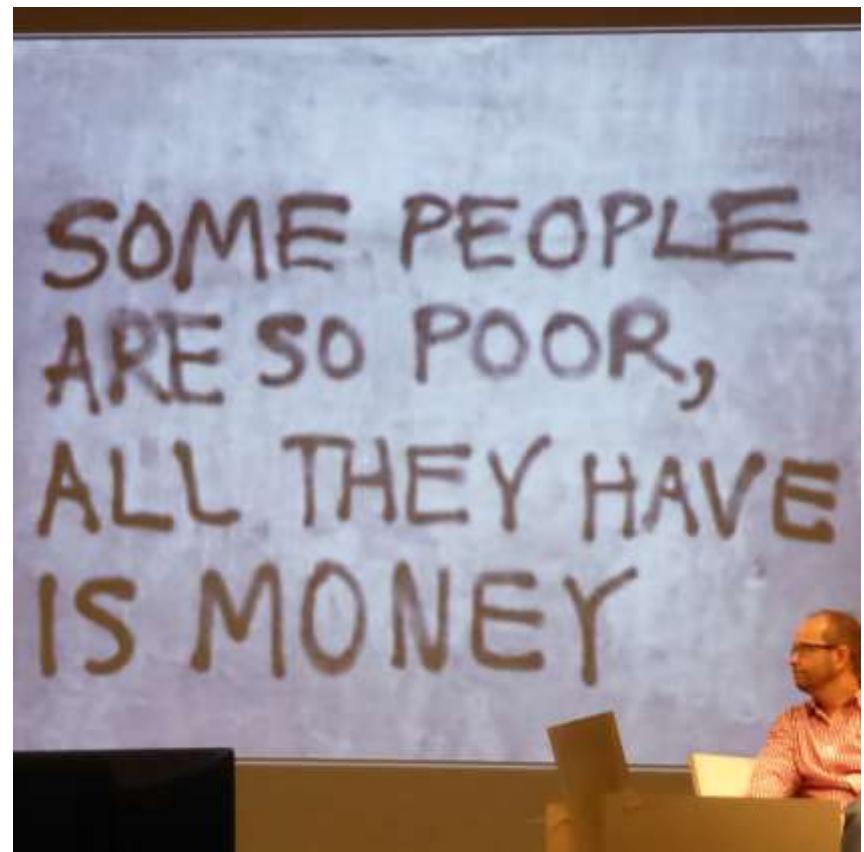
# WG3: Foundations and Regional Networks

- Sharing best practices and joining visions
- <https://www.fablabs.io/organizations>



# WG4: Fabchain - Distributed Ledger Technologies for the Fab Lab Network

- Exploring design of tokens and their relations within the community
- Producing the first white paper on block chains for fab labs



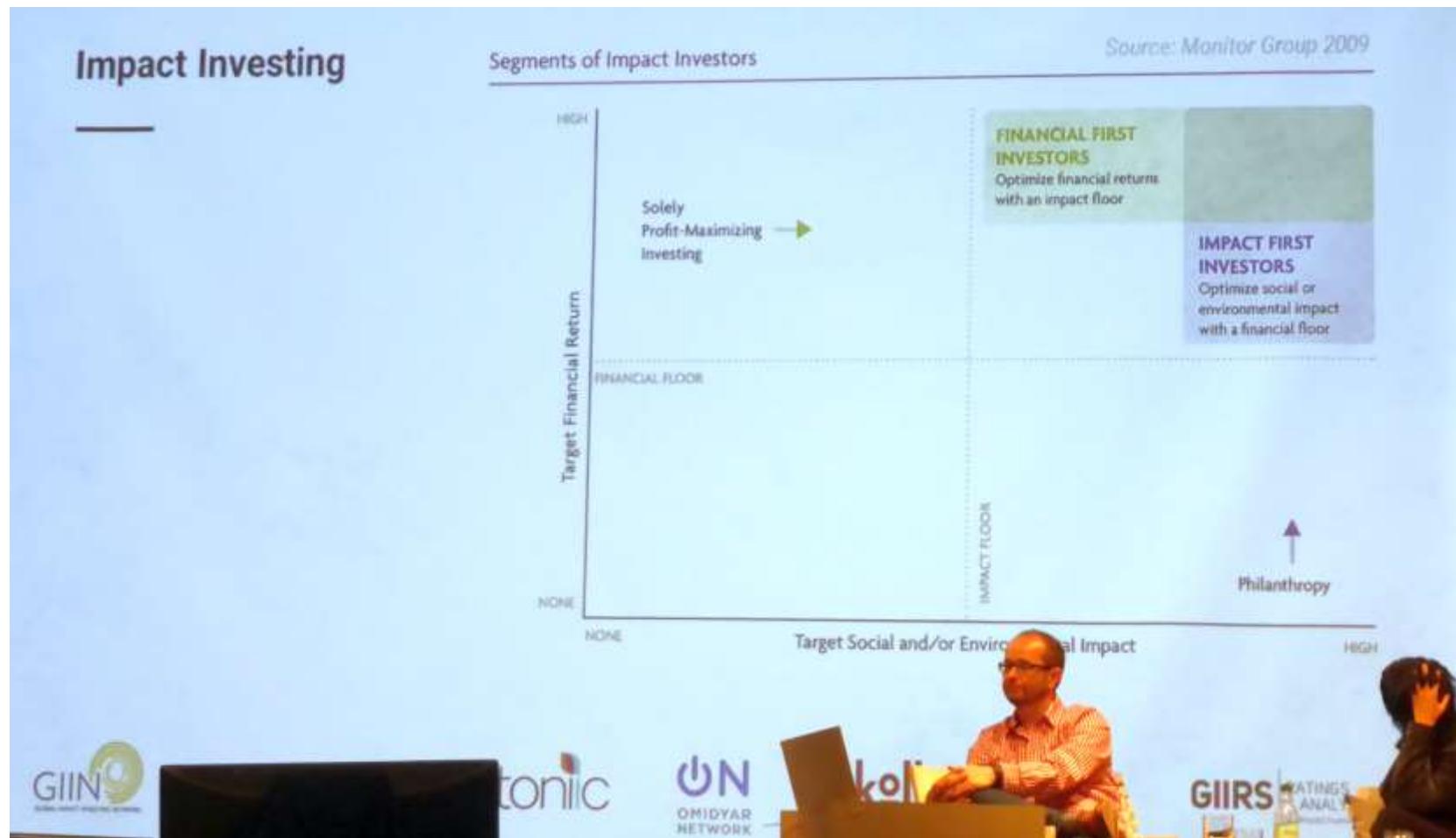
# WG4: Fabchain - Distributed Ledger Technologies for the Fab Lab Network



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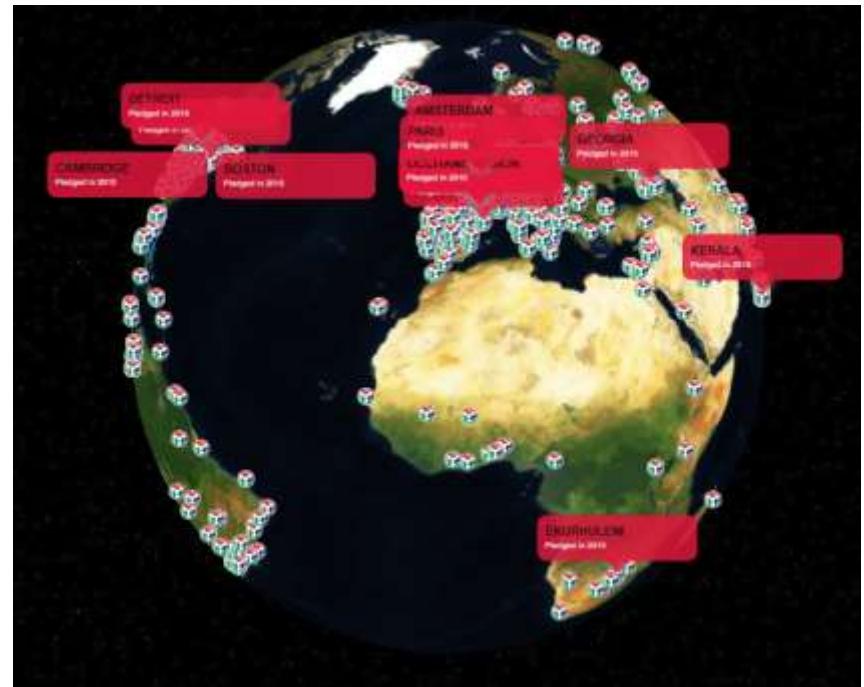


# WG4: Fabchain - Distributed Ledger Technologies for the Fab Lab Network



# WG5: Fab City: How To Make It Happen In Your City

- Fab City, a Global Vision with Local Flavours
- Fab City Prototypes: Where Do We Start
- Fab City and Fab Citizens: Bringing Everyone Onboard
- <http://fab.city/>



# WG6: Humanitarian FabKit

- Quality testing in-field prototypes
- Fab lab “in-a-box” for humanitarian and development context Working Group
- Fab Labs with impact & Leveraging the Fab Lab network Working Group

Humanitarian Makers, uniting to support disaster response,  
<https://www.humanitarianmakers.org/>

Field Ready; humanitarian supplies made-in-the-field

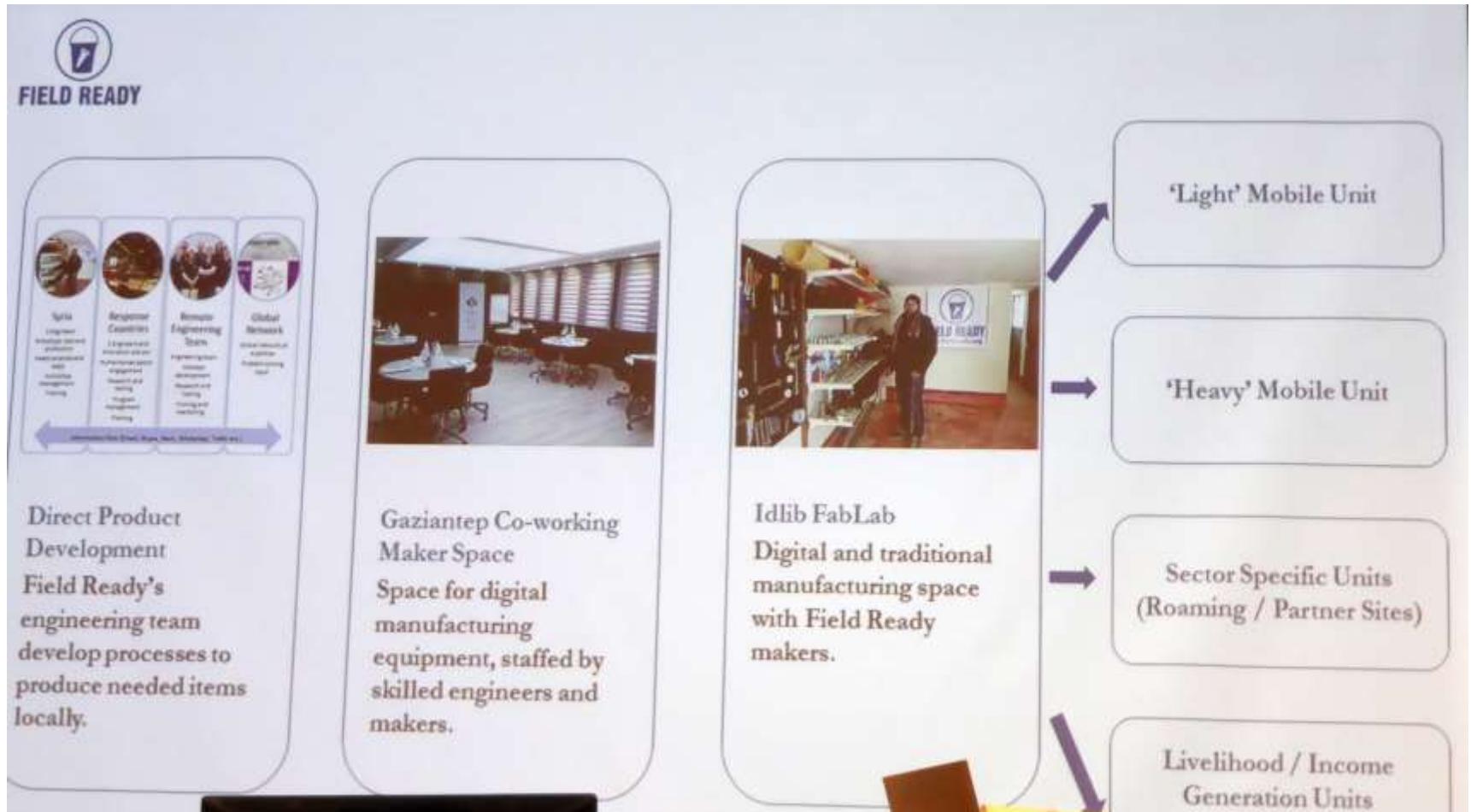
<https://www.fieldready.org/>



# WG6: Humanitarian FabKit



# WG6: Humanitarian FabKit



# WG6: Humanitarian FabKit



FIELD READY

**THANK YOU**

andrew.lamb@fieldready.org  
WhatsApp: +447740542348  
@andrewlamb @FldRdy @H\_Makers

Thursday 14:30 Utilizing Human Centered Design, up-cycling & Low Tech Innovations in a development context @FldRdy @innovationaidco

Thursday 17:00 Impact with Fab Labs Working Group  
@HumanitarianLab @d\_ott

Friday 16:00 Enabling Ecosystems  
@MakerNetGlobal @annawillcreate

Funded by a gift to the Fab Foundation  FAB FOUNDATION

With thanks to Refugee Openware 

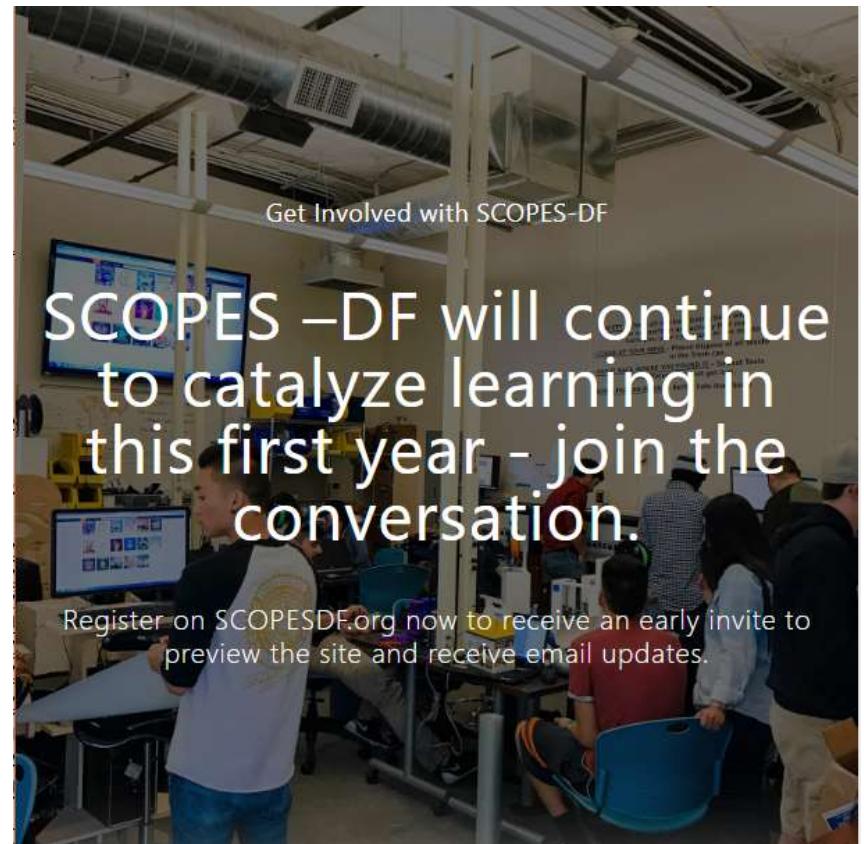
# WG7: Fab Craft

- Establish replicate methodologies for the Fab Lab network in craftsmanship and identity.
- Define general concepts such as: What are crafts? What is digital crafts? Typology of crafts? What is Fab Craft? Identity as differentiating value.
- Define project members and work teams for the digital handicraft network.
- Define Fab Lab typology specialized in crafts and identity.



# WG8: Education for Educators

- Setting-up workgroups; and Community of Practice for Education in STEM through Digital Fabrication
- Learning from and replicating the FabLat KIDS network
- Fab Kids! (k-12 curriculum writing)
- SCOPESDF lesson-athon, repository of lesson plans
- The future of education Workshop
- Maker-centered learning
  - Pedagogical approach
  - Using the engineering process
  - Developing a Sensitivity to Design
  - Shape socially responsible makers
  - Tactile Assisted Design for Non-Sighted Students
  - Alternative and special education



<http://scopesdf.org>

# And more ...

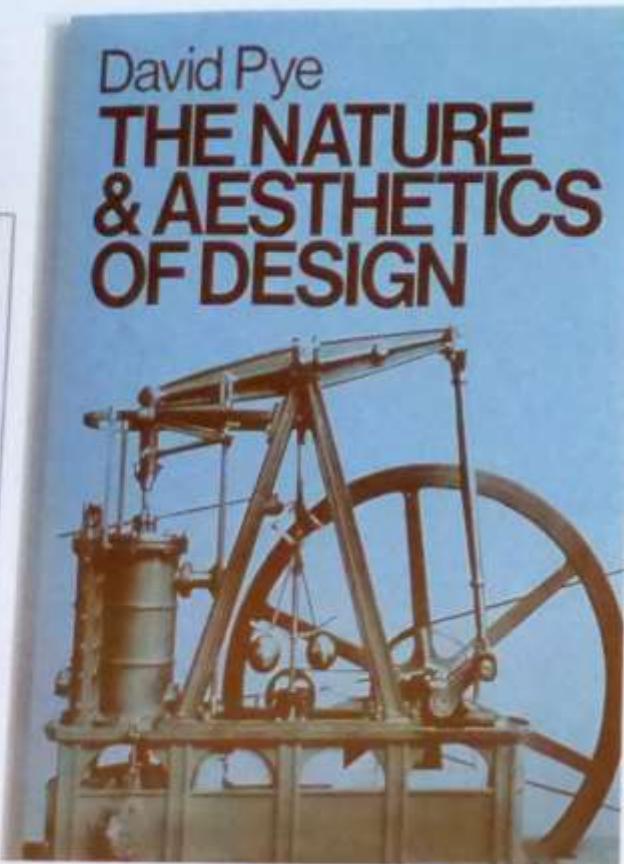
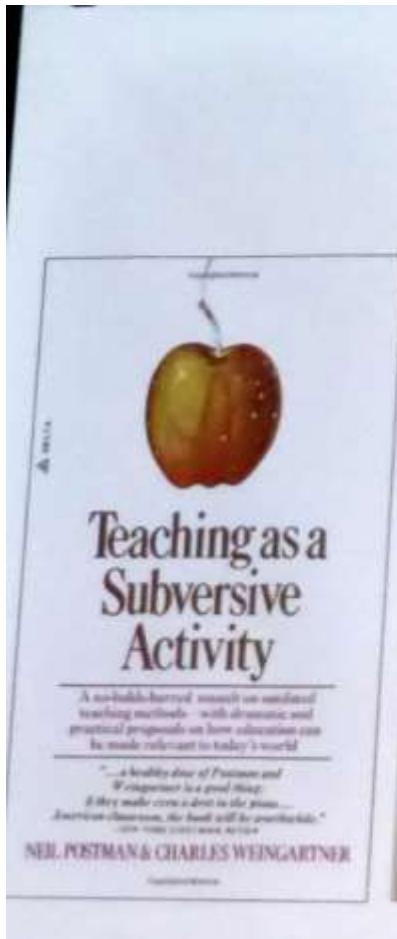


Afternoon workshops in other locations



Campus Creativo UNAB

# And more ...



**core77**  
design magazine & resource



[shapeways.com/blog](http://shapeways.com/blog)

# And more ...



## Project 1- Drawing to 3D Print



### Project Goal

Turn an ink drawing into a 3D-printable design, check printability, and 3D print it.

### Learning Objectives

- Learn how to create a basic 3D-printable design in Tinkercad from a 2D drawing
- Learn how to use Shapeways account,

- Cell phone with camera and ability to email pictures
- Computer or laptop with internet access, preferably with scroll-wheel three-button mouse

### Software Tools

- Online SVG converter [image.online-convert.com/convert-to-svg](http://image.online-convert.com/convert-to-svg)
- Tinkercad [www.tinkercad.com](http://www.tinkercad.com)
- Shapeways [www.shapeways.com](http://www.shapeways.com)

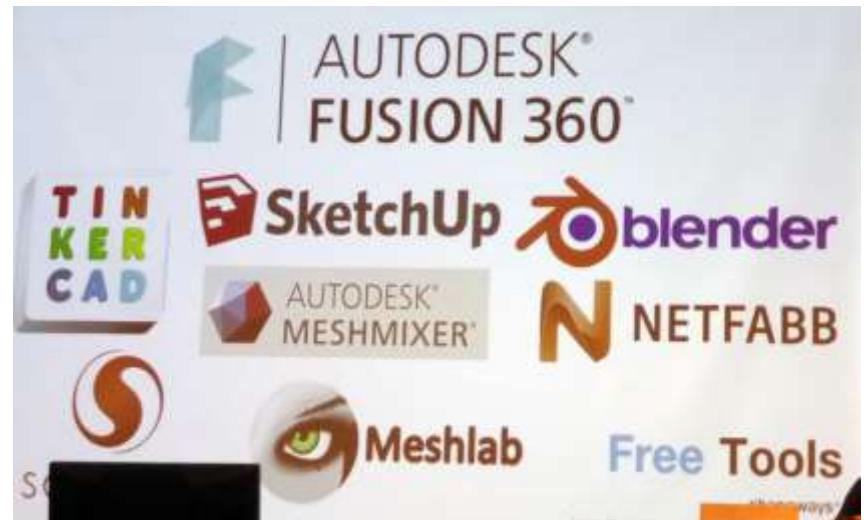
### Difficulty Level: EASY

- Very simple design process with a high chance of success on the first try, during one class

### Setting up your accounts

### Step 1: Create your Shapeways Account

### Presentation by Shapeways

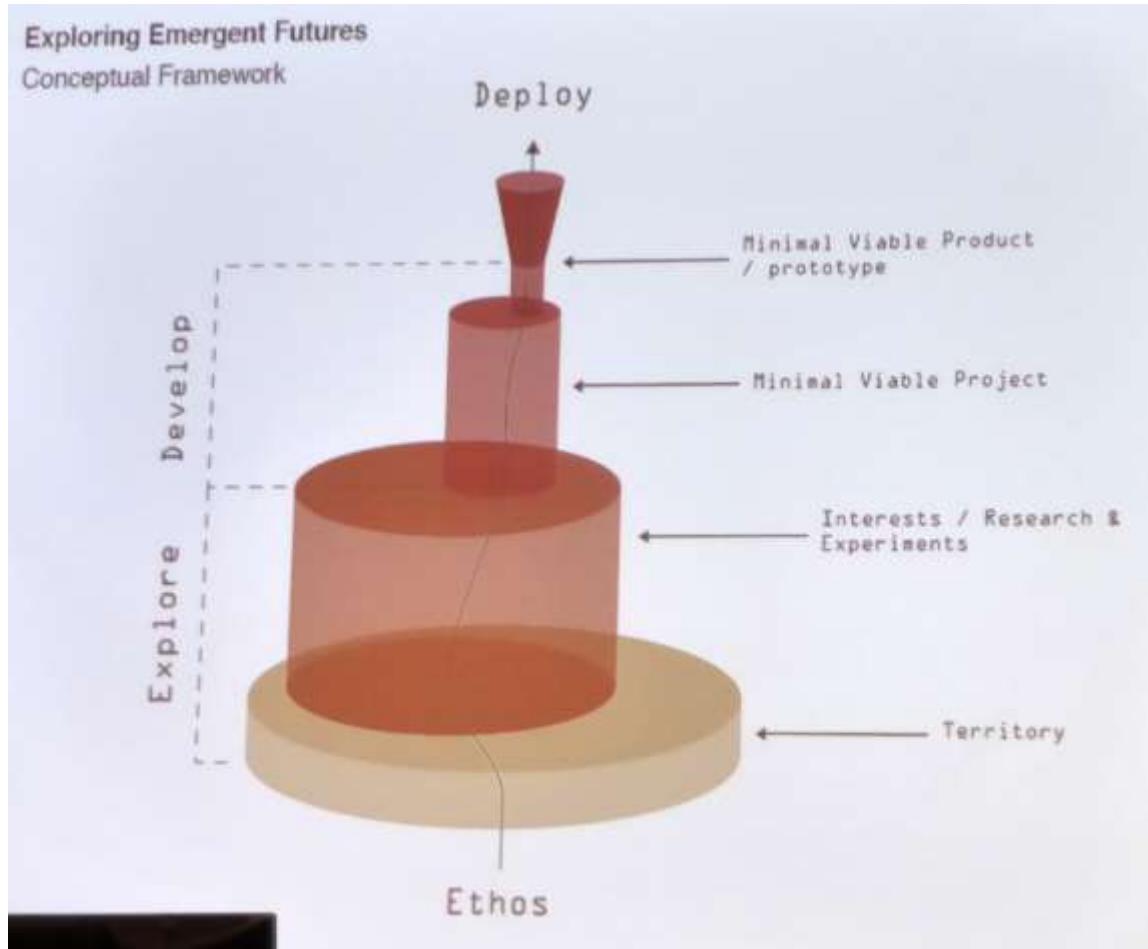


<http://tinyurl.com/3dcurriculumv1>

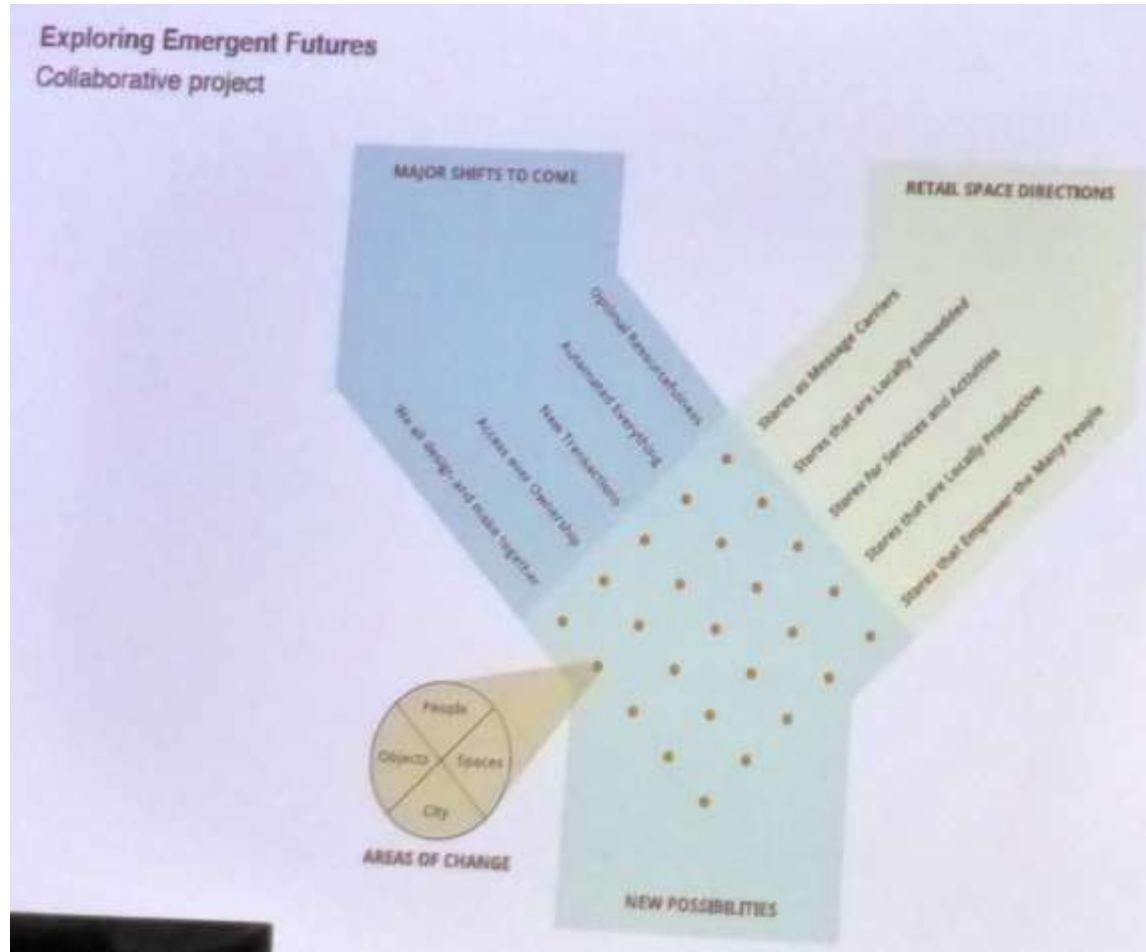
# And more ...



# And more ...



# And more ...



# And more ...



## Workshop: Sustainable Fab Lab Goals *Taller: Objetivos de Fab Labs Sostenibles*

Pieter van der Hijden (The Netherlands, Suriname) with Enrico Bassi (Italy), Vaneza Caycho Ñuflo (Peru), Neville Govender (South Africa),  
Yogesh Kulkarni (India), Wendy Neale (New Zealand)

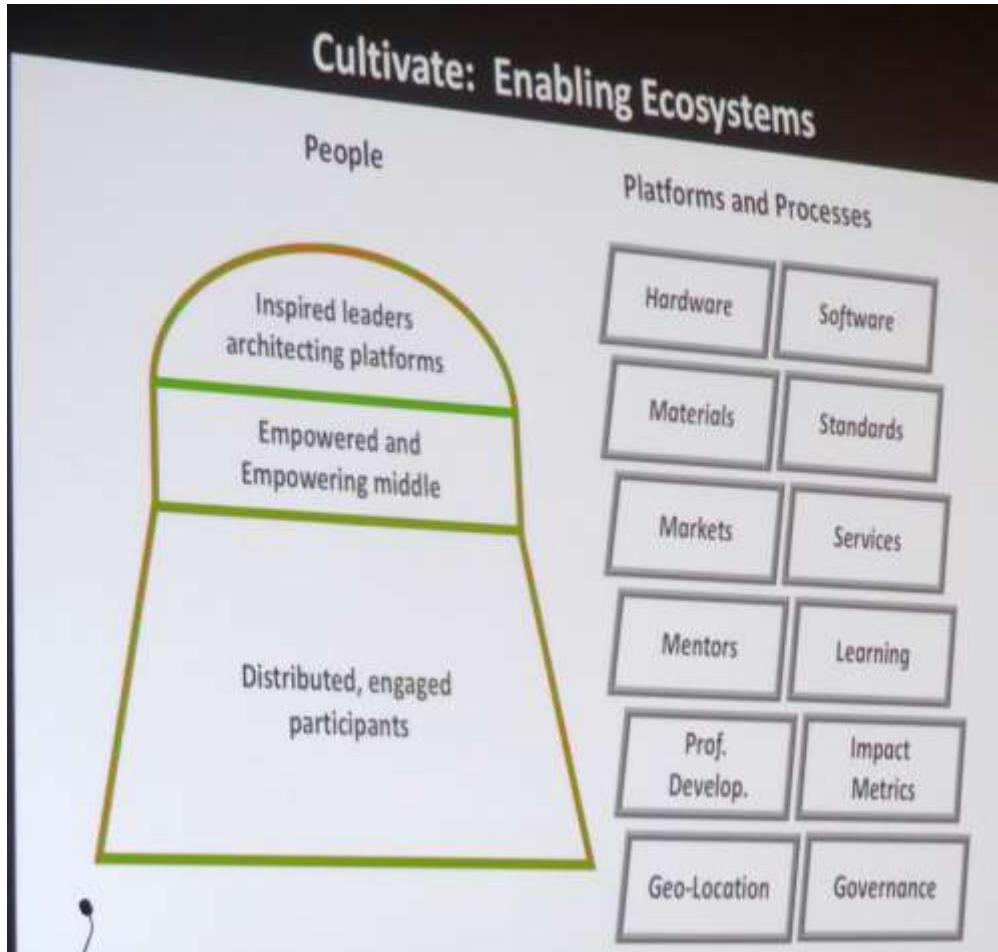
<http://bit.ly/fab13-sdg>

# Symposium (1 day)

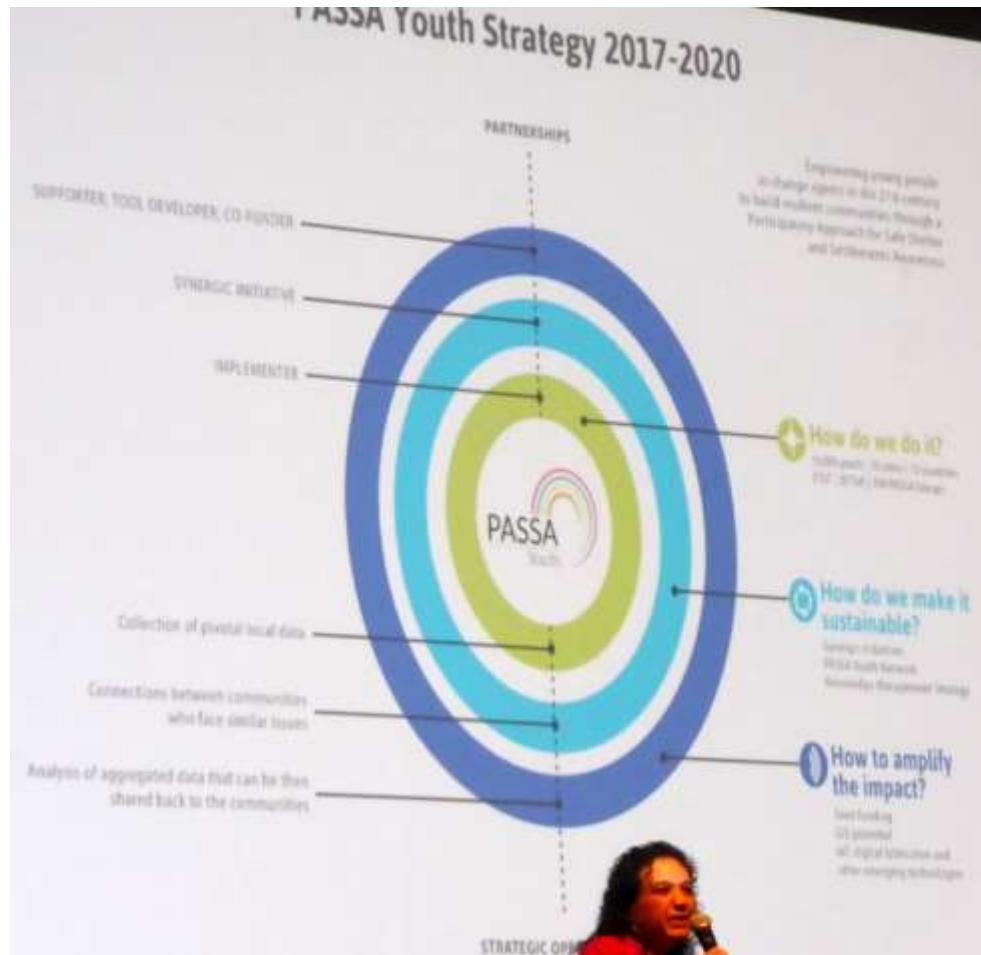
- How To Make (almost) Anything
- How To (almost) Make Anything
- Designing and Making Meaning



# Symposium (1 day)



# Symposium (1 day)



# Symposium (1 day)



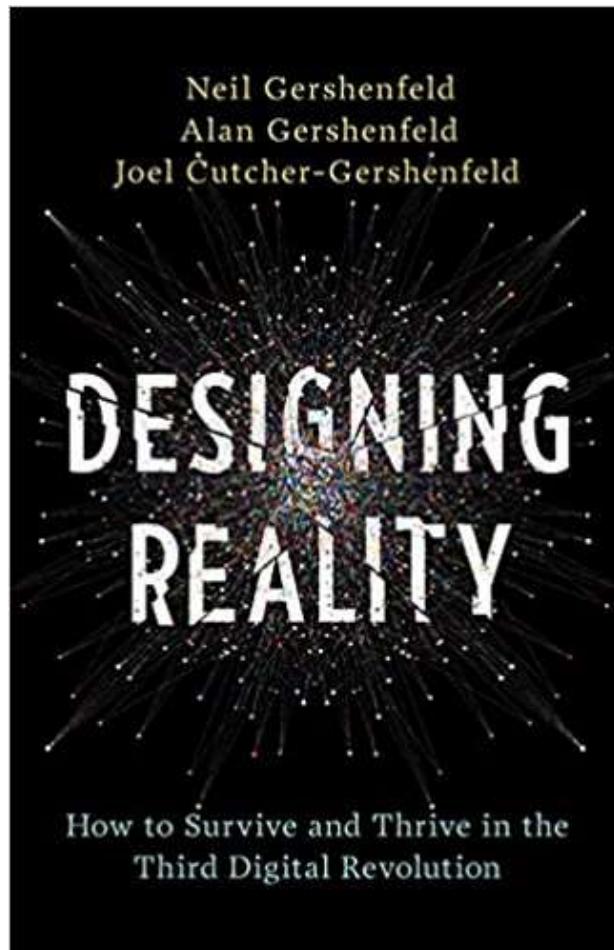
# Symposium (1 day)



# Symposium (1 day)



# Symposium (1 day)



How to (almost) make anything

- Book by 3 brothers Gershenfeld
- Release date November 2017

# Festival (2 days)

- Projects
- Suppliers
- Fab Lat Kids
  - Organization:  
<http://fablatkids.org/>
  - Workshop catalogue:  
<http://www.youblisher.com/p/1853433-Fab-Lat-KIDS-at-Fab-13-Santiago/>



GAM – Centro Cultural Gabriela Mistral

# Festival (2 days)



# Festival (2 days)



# Festival (2 days)



# Festival (2 days)



# Festival (2 days)



# Festival (2 days)



# Festival (2 days)



# Festival (2 days)



# Festival (2 days)



# Festival (2 days)



# Festival (2 days)



# Festival (2 days)



# Festival (2 days)



# Festival (2 days)



# Festival (2 days)



# Festival (2 days)



# Conclusion



Cybersyn review; London Design Biennale 2016; Fab Lab Santiago;  
[www.countercultureroom.cl](http://www.countercultureroom.cl)

# Conclusion

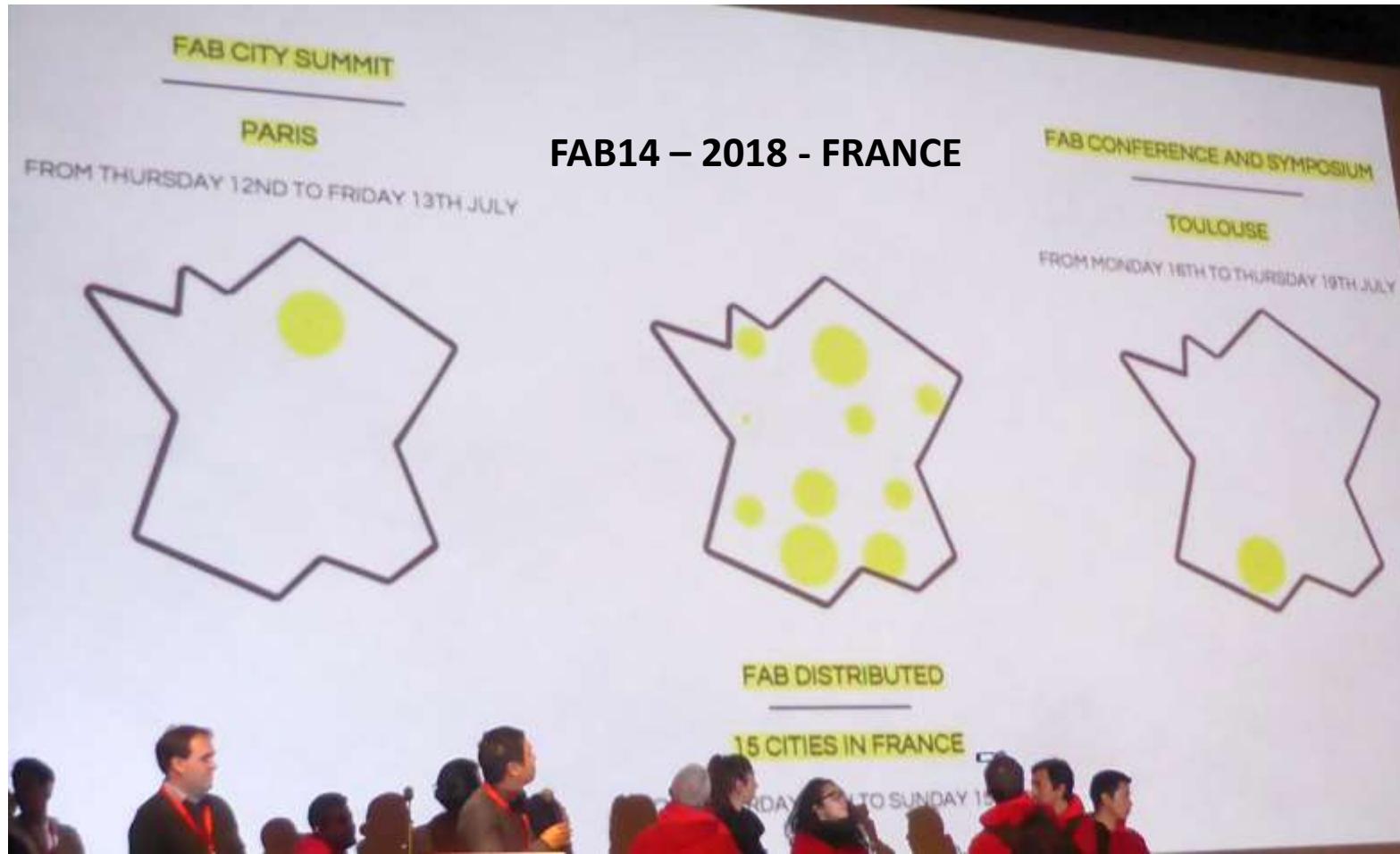


# Conclusion



UN Sustainable Development Goals, website in English and Spanish;  
<http://www.un.org/sustainabledevelopment/sustainable-development-goals/>

# Conclusion



¡Muchas Gracias!

Pieter van der Hijden  
[pvdh@sofos.nl](mailto:pvdh@sofos.nl)