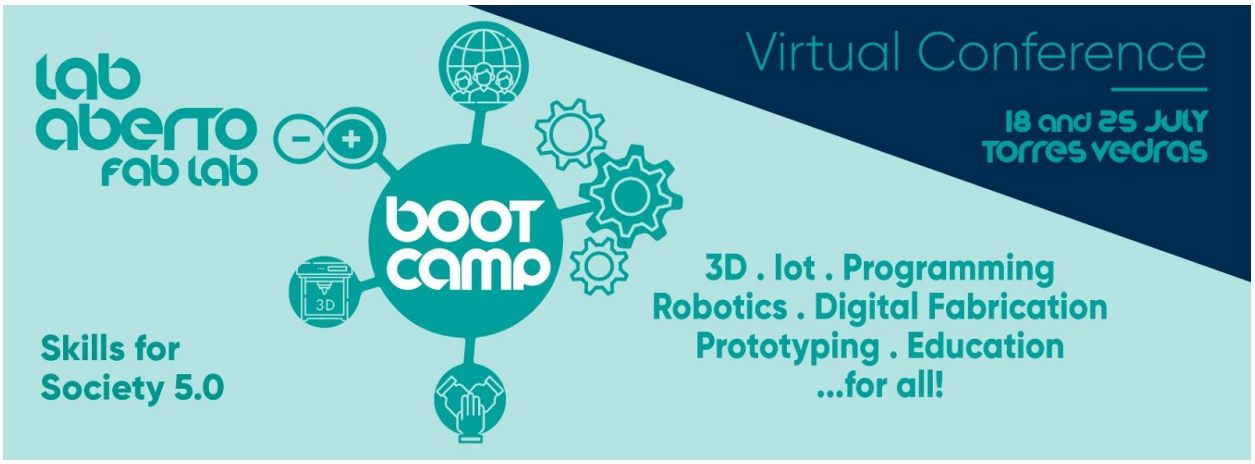

LAB ABERTO FAB LAB

Bootcamp 2020

Virtual Conference - Charter

Skills for Society 5.0

2020, JULY, 18 and 25, Lab Center, Torres Vedras - Portugal - Europe

Organization: LAB ABERTO FAB LAB, non-profit association

FAB LAB lababerto
como fazer quase tudo

SUMMARY

This is the guiding document for a webinar version of the original **Lab Aberto Fab Lab Bootcamp 2020** event, which we planned to hold next July in Torres Vedras, Portugal, but which has since been postponed until July 15-18, 2021. The present situation pandemic presented us with the challenge of boosting activities at a distance. A redesigned version of the event will take place by video conference on **July 18 and 25, 2020**.

Both in this webinar version, as in the face-to-face version scheduled for 2021, the main objective of our conference will be to **discuss ways to implement FAB LAB environments in a school**, bringing together teachers, principals, city councils, companies, professionals and FAB LABs in a four-day event.

Since the dawn of **digital technology**, the struggle is to keep up with it. Not only in the perspective of hardware, electronics and programming, but also to keep up with the need for collaboration. When we see people living in their immersive bubbles revolving around smartphones, for instance, and the world around continues to increase in complexity, becoming increasingly harder to grasp individually, we feel that strategies must be implemented to enable everyone to harness and take advantage of current and future technological advances.

This global and complex scenario raises some new problems that the **current educational** system is not able to respond to. Specifically, the

need for **active collaboration, creativity and self-driven motivation**, and also the need for concrete activities that help learners to grasp complex contents and concepts.
It is a fact that this younger generation still cannot predict what their future jobs will be like, nor the roles they will play, in what is called **Society 5.0**, however, their preparation for this challenge involves the acquisition of skills and knowledge together with collaborative and creative capabilities.

In our view, the implementation of various aspects of the **FAB LAB culture**, starting from the **tech-savvy mindset** to the **deep and intense collaboration between people**, can be a valid and effective complementary response to the education system of the present day, which, despite being considered as being designed to help and prepare this young generation for the **challenges of the near future**, in real terms, it is not able to satisfy those needs.

PRINCIPLES

- All the activities and projects discussed and concluded during the event need to take in account and highlight the **educational and social impact** and the concrete applications in the real world;
- All of the events/projects must have the **implicit potential** for use in educational, human and social purposes;
- The event must take place in a **collaborative and informal environment;**
- The procedures and activities of the event must follow the ideals of a modern **circular economy**;

- The various activities must be related to the concept of **Society 5.0**[1] concept, proposed by the government of Japan in 2016.

- All the **activities** and **materials** should be made **available** under the **open source licence**;
- All the documents about the projects/activities should explicitly state how to **reproduce them safely**, and allow the **sharing** of information by contributing for the growth of **knowledge** in the specific themes;

NEEDS

Companies in Portugal are currently facing a shortage of **qualified** workforce and are looking to the education system for an answer to this gap. Portuguese workers, both current and future, need to embrace the skills that drive innovation, support technologies and solve problems creatively, as the current educational model is not evolving fast enough to keep up with these changing needs .

CALL TO ACTION

Teachers, industry leaders, families, and, most importantly, students, all recognize the need for a **change in traditional school**. With this initiative we can start to work with local and nationwide schools, with all the communities interested in education, including companies, Fab Labs and other collective initiatives, in order to propose another possible learning path within the portuguese educational system.

PROBLEM TO SOLVE

The **jobs** for the next 10 years are not invented yet. The educational system right now does not give response to this challenge. The educational strategies should also focus on **soft skills** identified for the XXI century. More and more multinational tech companies like Google and Amazon are investing and coming to Portugal and we don't have enough human resources being educated to meet this opportunity. In some areas these numbers are even decreasing. ⅔ of the portuguese students **do not proceed their studies** in to university. To counter this, we must include manual skills, marketing, sales, entrepreneurship and communication skills in the portuguese curriculum. We must also **integrate companies, local**

institutions, Fab Labs, educational initiatives and schools on the same boat of the development and education of young people.

EDUCATIONAL PRINCIPLES

LEARNING is promoted[1] when…

(a) ... learners are engaged in solving real-world problems.

(b) ... existing knowledge is activated as a foundation for new knowledge.

(c) ... new knowledge is demonstrated to the learner.

(d) ... new knowledge is applied by the learner.

(e) ... new knowledge is integrated into the learner's world.

[1] Source: Merrill, M.. (2001). First Principles of Instruction. Educational Technology Research and Development. 50. 10.1007/BF02505024.
Theory: https://learningobjectslearningstyles.edublogs.org/2019/10/27/complex-learning-theories/

About FAB LABs[2]

What is a Bootcamp FAB LAB?

Bootcamp Fab Lab is an event that happen once a year organized by the FAB FOUNDATION or locally by local Fab Labs. Our event is an biennial event run by Lab Aberto Fab Lab, that takes place at Lab Center in Torres Vedras, Portugal. It provides immersive activities that can be played or reproduced at your local community, be it a Fab Lab, a School, a private or non-profit institution, **fostering creativity, promoting critical thinking, improving media and tech literacy and enabling invention** by providing access to tools for digital fabrication. It gathers FAB LABs, field experts, education professionals, companies, schools, inventors, makers, local associations and ordinary people.

What is a fab lab and what's in a fab lab?

Fab labs are a **global network** of local labs, enabling invention by providing access to tools for digital fabrication. Fab labs share an evolving inventory of core capabilities to make (almost) anything, allowing people and projects to be shared.

What does the fab lab network provide?

Operational, **educational,** technical, financial, and logistical assistance beyond what's available within one lab.

Who can use a fab lab?

Fab labs are available as a community resource, offering **open access** for individuals as well as scheduled access for programs.

[2] source: http://fab.cba.mit.edu/about/charter/

Lab Aberto FAB LAB Bootcamp 2020

Saturday, July 18th (tbc)

Meeting between speakers, trainers, mentors and consultants and the local administration (to be confirmed).

Talks

Saturday, July 18, Lectures

14:00 Hanne Voldborg Andersen, Fab @ school Denmark (Denmark)

14:30 Miquel Carreras, Liceu Politecnic, Barcelona (Spain)

15:00 Michael Stone, Public Education Foundation (USA)

15:30 break

16:00 Tom Dubick, Charlotte Latin FabLab (USA)

16:30 Liz Whitewolf, Fab Foundation (USA)

17:00 Fernanda Rollo, FCSH, Nova University (Portugal)

Saturday, July 25, Lectures, Workshops and Fab Experience

14:00 Mikko Rajanen, Oulu University (Finland)

14:30 João Feyo, OPOLAB (Portugal)

15:00 Break

15:30 3D Modelling & Printing Workshop (Mentor: Artur Coelho)

16:00 Arduino Workshop (Mentors: António Gonçalves, João Simões)

16:30 Stop Motion Animation Workshop (Mentor: Francisco Lança)

17:00 Break

17:30 Global vision of Fab Experience projects, Ferdinand Meier, KaLi FAB LAB (Germany),

18:00 Gel Dispenser - Safety, Hygiene, Arduino (Mentors: André Rocha, Fab Lab Benfica; Michael Stone, Public Education Foundation)

18:30 Polar Graph Plotter - Environment, Arduino, IoT (Mentors: Miguel Almeida, VIVALAB; Ricardo Mendes, HARDWARECITY)

19:00 IoT Greenhouse - Environment, Arduino, IoT (Mentors: Francisco Mendes, HARDWARECITY)

Workshops

15:30 - 3D Modelling & Printing (Trainer: Artur Coelho)

16:00 - Arduino (Trainer: António Gonçalves, João Simões)

16:30 - Stop Motion Animation (Trainer: Francisco Lança)

Fab Experience

17:30 - Overview of Fab Experience projects, Ferdinand Meier, KaLi FABLAB (Germany)

18:00 - Gel Dispenser - Security, COVID19, Arduino (Mentors: André Rocha, Fab Lab Benfica; Michael Stone, Public Education Foundation)

18:30 - Polar Graph Plotter - Math, CNC, Arduino (Mentors: Miguel Almeida, VIVALAB; Ricardo Pereira, HARDWARECITY)

19:00 - IoT Greenhouse - Environment, Arduino, IoT (Mentors: Francisco Mendes, HARDWARECITY)

Fab Experience (online version)

Teams of five members (participating in the event) will participate remotely in a collaborative / informal learning environment so that, on dates to be defined, and with two Fab Labs mentors, they can organize a simple and low cost project (see list below), which can be easily implemented in your professional environment.

Project # 1 Gel Dispenser - Safety, Hygiene, Arduino (Mentors: André Rocha, Fab Lab Benfica; Michael Stone, Public Education Foundation)

Project # 2 Polar Graph Plotter - Environment, Arduino, IoT (Mentors: Miguel Almeida, VIVALAB; Ricardo Mendes, HARDWARECITY)

Project # 3 IoT Greenhouse - Environment, Arduino, IoT (Mentors: Francisco Mendes, HARDWARECITY)

Demonstrations (to be confirmed)

Companies, institutions, makers are invited to participate in our projects/workshops showroom.

GUIDELINES

These guidelines are for reference only and are not strictly **mandatory**. Our goal is to have some coherence and consistency in all activities that will take place at the event.

For this version of the Online Lab Aberto Bootcamp event there will be a **test moment**, which takes place on June 27th.

Speakers, consultants and observers

- Speakers should agree with the **PRINCIPLES** of this bootcamp charter;
- As all presentations will be recorded (so that they are part of our knowledge base) within the scope of the Fab Experience activity, we advise speakers to train their presentation at least five times;
- Relate your presentation to the **Society 5.0**[3] **concept**, proposed by the Government of Japan in 2016.
- **Prepare the presentation** for 20 minutes, with illustrative pictures/graphs/charts and not only text;
- Be **open to discuss** freely questions presented by all the participants (Consultors, observers, speakers, mentors, trainers, organization), at the social events, being breaks or gatherings;
- **Keep responses** positive and constructive: people are sensitive to criticism; be nice!
- Be prepared to **rephrase** in order for better communication;
- **Collaborate**, collaborate, collaborate!
- **Enjoy**, **Teach**, **Learn**, Have **Fun** & **Spread** the **Word**!

Mentors

- **Mentors** should agree with the PRINCIPLES of this bootcamp charter (on top);
- Connect your activity/project/guidance to the **Society 5.0**[4] **concept**, proposed by the government of Japan in 2016;
- Prepare a **finished project and project guide (wikifactory)**;
- If you have to make a **short presentation**, prepare it for 10 minutes, with illustrative pictures/graphs/charts and not only text: **practice** for five times;
- Be **open to discuss** freely questions presented by all the participants (consultants, observers, speakers, mentors, trainers, organization), at the social events, breaks or gatherings;
- **Keep responses** positive and constructive: people are sensitive to criticism: be nice!

[3] Source: Japannese Government office, https://www8.cao.go.jp/cstp/english/society5_0/index.html

- Be prepared to **rephrase** for better communication;
- **Collaborate**, collaborate, collaborate!
- **Enjoy**, **Teach**, **Learn**, Have **Fun** & **Spread** the **Word**!

Workshop Experts/Trainers

- **Experts&Trainers** should agree with the PRINCIPLES of this bootcamp;
- Connect your workshop to the **Society 5.0[4] concept**, proposed by the government of Japan in 2016;
- Prepare a clear and **finished** workshop;
- If you have to make a **short presentation**, prepare it for 10/20 minutes, with illustrative pictures/graphs/charts and not only text: **practice** for five times;
- Be **open to discuss** freely questions presented by all the participants (consultants, observers, speakers, mentors, trainers, organization), at the social events, being breaks or gatherings;
- **Keep responses** positive and constructive - people are sensitive to criticism: be nice!;
- Be prepared to **rephrase** in order for better communication;
- **Collaborate**, collaborate, collaborate!
- **Enjoy**, **Teach**, **Learn**, Have **Fun** & **Spread** the **Word**!

Organizations, entities, enterprises, participants and Public in general

- Be **open to discuss** freely questions presented by all the participants (consultants, observers, speakers, mentors, trainers, organization), at the social events, being breaks or gatherings;
- **Keep responses** positive and constructive - people are sensitive to criticism: be nice!;
- Be prepared to **rephrase** in order for better communication;
- **Collaborate**, collaborate, collaborate!
- **Enjoy**, **Learn**, Have **Fun** & **Spread** the **Word**!

Language

Speakers, consultants, observers, mentors, workshop experts/trainers, participants and Public in general:

- **Main language spoken** at talks will be english, the exceptions will be the Opening and Closing Sessions**;**
- **Some** Fab Experience projects & workshops will have english speaking mentors, but always **teaming** with a portuguese mentor;
- **Foreign guests** - Please do try your portuguese skills with us! :)

PRESS RELEASE

In 2020, the meeting of the national Fab Labs would take place in Torres Vedras, from 16 to 19 July, at the Lab Center space, organized by the LAB ABERTO FAB LAB Association, a non-profit association. This event would have the support of the Torres Vedras City Council and the United States Embassy, in partnership with other Fab Labs, schools, companies, teachers, inventors, manufacturers, associations and institutions.

However, given the current pandemic situation, the challenge facing the organization was to promote activities in an online version by videoconference. So, although the face-to-face event was postponed to July 15-18, 2021, we decided to accept the challenge and organize a **webinar version of the event that will take place on July 18 and 25, 2020**.

Both in this webinar version and in the face-to-face version, scheduled for 2021, the main objective will be to discuss **ways to implement FAB LAB environments in a school,** bringing together teachers, principals, city councils, companies, professionals and FAB LABs in a four-day event.

This meeting will begin with a sequence of lectures, where Fab Labs coordinators, teachers and project leaders will share their experiences. On July 18, Saturday, we will have the presence of the main speakers who will address the educational perspective of a Fab Lab: Hanne Voldborg Andersen, Fab @ school Denmark (Denmark), Miquel Carreras, coordinator of the FAB LAB at the Politecnic High School, Barcelona (Spain), Michael Stone, Public Education Foundation (USA), Tom Dubick,

Charlotte Latin FabLab (USA), Liz Whitewolf, Fab Foundation (USA), Francisco Mendes, Hardware City (Portugal). Later, the meeting will be closed by Fernanda Rollo, researcher professor at FCSH at Universidade Nova (Portugal). On July 25, Saturday, the themes will be more focused on Fab Labs, including security in a Fab Lab, the business management of a Fab Lab and, finally, its relationship with the scientific and business community in Portugal. Invited speakers: Mikko Rajanen, University of Oulu (Finland), João Feyo, OPOLAB (Portugal).

The event also has workshops on digital prototyping, 3D modeling and printing, electronics, robotics, programming and stop motion animation. This year we will have a “Fab Experience” where participants are challenged to complete a project, in teams of 5, working remotely and individually by videoconference, and also guided by videoconference by two members of the FAB LAB community, they will be immersed in the informal learning environment , simulating the use of a FAB LAB carrying out a collaborative project. All activities are designed for all types of audiences, with a special focus on those who are taking the first steps in the use of these technologies and methodologies in professional and educational contexts.

This event is also aimed at education professionals. The participating teachers will have the opportunity to get to know the national community of the FAB LABs and participate in several workshops / projects to introduce digital production, programming, robotics, modeling and 3D printing, among others. It is intended that this sharing of knowledge, where teachers and educators of all levels of education can participate, results in a strategic orientation noted in a document to be handed over to the Portuguese government, with concrete, pragmatic ideas and strategies on how to

create a school based on environments collaborative and project-based cooperatives that characterize the FabLab movement.

In numbers, for 2021, we expect the presence of about 200 participants, we will have 11 keynote speakers, 10 trainers, 20 mentors, there will be 40 volunteers, 5 consultants and 5 observers. We will present 11 lectures, 10 workshops and 10 projects. The event will be represented by 5 nationalities and people from all over the country.
In this webinar we have, with the presence of about 50 participants, we will have 9 keynote speakers, 4 trainers, 8 mentors, there will be 4 interns, 5 consultants and 5 observers. We will present 11 lectures, 3 workshops and 4 Fab Experience projects. The event will be represented by 5 nationalities and people from all over the country.

A Bootcamp is an informal meeting of digital manufacturing laboratories, whose members meet in order to discuss and share knowledge in the area of digital manufacturing, project prototyping, training and management. There are about 21 FabLabs active in Portugal, with many more to be opened and organized.

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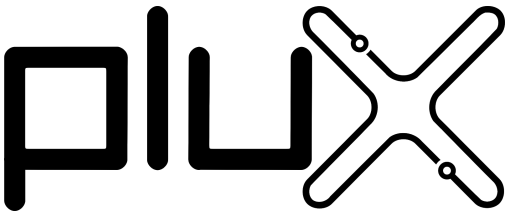
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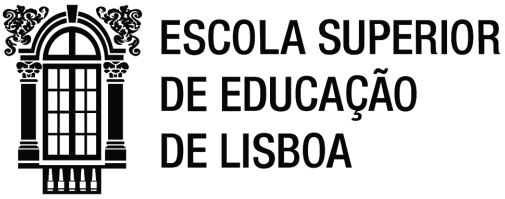
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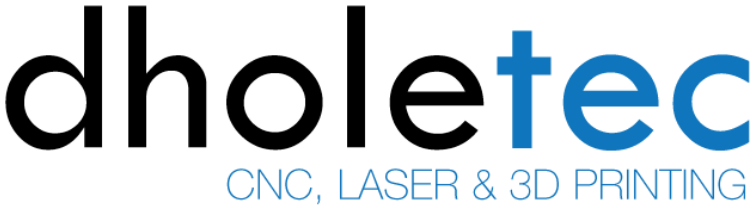
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PEOPLE

The people involved in this Fab Lab Bootcamp event are grouped in two major categories: **ORGANIZATION and PARTICIPANTS**. The former are all the people that will organize, coordinate, evaluate and put activities in action, namely: ASSOCIATION BOARD, CONSULTANTS, OBSERVERS, SPEAKERS, MENTORS, TRAINERS, ORGANIZERS; the PARTICIPANTS are all the people that need to be registered at the event, being invited or paying the fee.

Speakers

- Torres Vedras City Hall (Portugal) (to be confirmed);
- (Host) António Gonçalves, Lab Aberto Fab Lab (Portugal);
- Hanne Voldborg Andersen, FabLab@SCHOOLdk (Denmark);
- Miquel Carreras, Diretor Liceu Politecnic, Barcelona (Spain);
- Michael Stone, Public Education Foundation (USA);
- Tom Dubick, Charlotte Latin FabLab (USA);
- Liz Whitewolf, Fab Foundation (USA);
- Hugo Silva, Instituto de Telecomunicações (Portugal);
- Fernanda Rollo, FCSH da Nova University (Portugal);
- Mikko Rajanen, Oulu University (Finland);
- João Feyo, OPOLAB (Portugal).

Trainers

- Artur Coelho, Venda do Pinheiro School Group (Portugal)
- António Gonçalves (Lab Aberto Fab Lab)
- João Simões (Lab Aberto Fab Lab)
- Francisco Lança (Arte Estúdio Imaginário)

Mentors (Fab Experience)

- Ferdinand Meier, KaLi FAB LAB (Germany)

- Miguel Almeida, VivaLab (Portugal)
- Francisco Mendes, HARDWARE CITY (Portugal)
- Ricardo Pereira, HARDWARE CITY (Portugal)

Consultants

- Liz Whitewolf, Fab Foundation (USA)
- Francisco Mendes, HARDWARE CITY (Portugal)
- Fernanda Rollo, FCSH, Nova University (Portugal)
- Miquel Carreras, Liceu Politecnic, Barcelona (Spain)

Observers

- Hanne Voldborg Andersen, Fab@school Denmark (Denmark)
- Tom Dubick, Charlotte Latin FabLab (USA)
- Mikko Rajanen, Oulu University (Finland)

Board

- António Gonçalves
- João Simões
- Paulo Cabrita

Team

- Artur Coelho
- Cristina Antunes
- Isabel Lourenço
- Alexandra Silva
- Adélia Simões
- Severino Raposo
- Rodrigo Simões
- Maria Clara Alves
- Maria Inês Gonçalves
- Miguel Ramalho
- Manuel Moreira
- Roberto Gamboa
- Madalena Gamboa
- Guilherme Cruz
- Miguel Cabeças
- Tomás Bernardino
- Joana Ferreira (internship IPL)
- Jorge Antunes (internship IPL)
- João Carvalho (internship IPL)
- Rodrigo Pataco (internship IPL)

Contacts

Info: lababerto bootcamp2020@gmail.com

Organization: lababerto.org@gmail.com

Lab Aberto Fab Lab Association Board: lababerto@gmail.com

Website

https://lababerto.fablabbootcamp2020.pt/

Organization