Fab labs in developing country: case study of Serbia

Dr Ivana Gadjanski, founder of Fab Initiative, Serbia; @ivanagadjanski; www.fablab.rs

Fab labs in developing country: case study of Serbia

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SCIENTIFIC AMERICAN™

Scientists in Serbia Protest against Dire Financial Situation

By Ivana Gadjanski on July 7, 2013

- budgetary allocation for R&D is only 0.35% GDP
- 1% GDP is recommendation of European Union

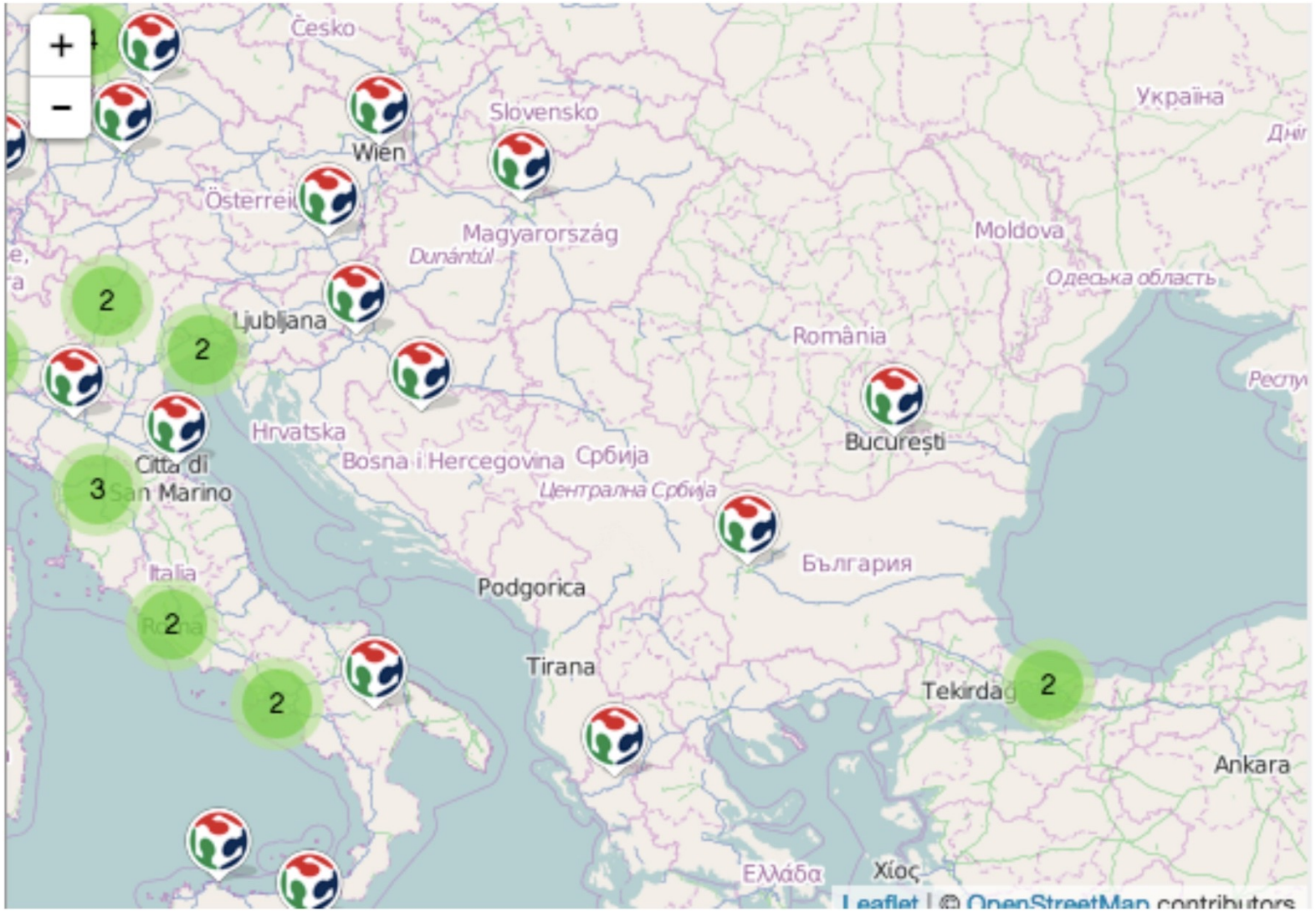
49.4%

Youth Unemployment Rate (Serbian Statistical Office 2013)

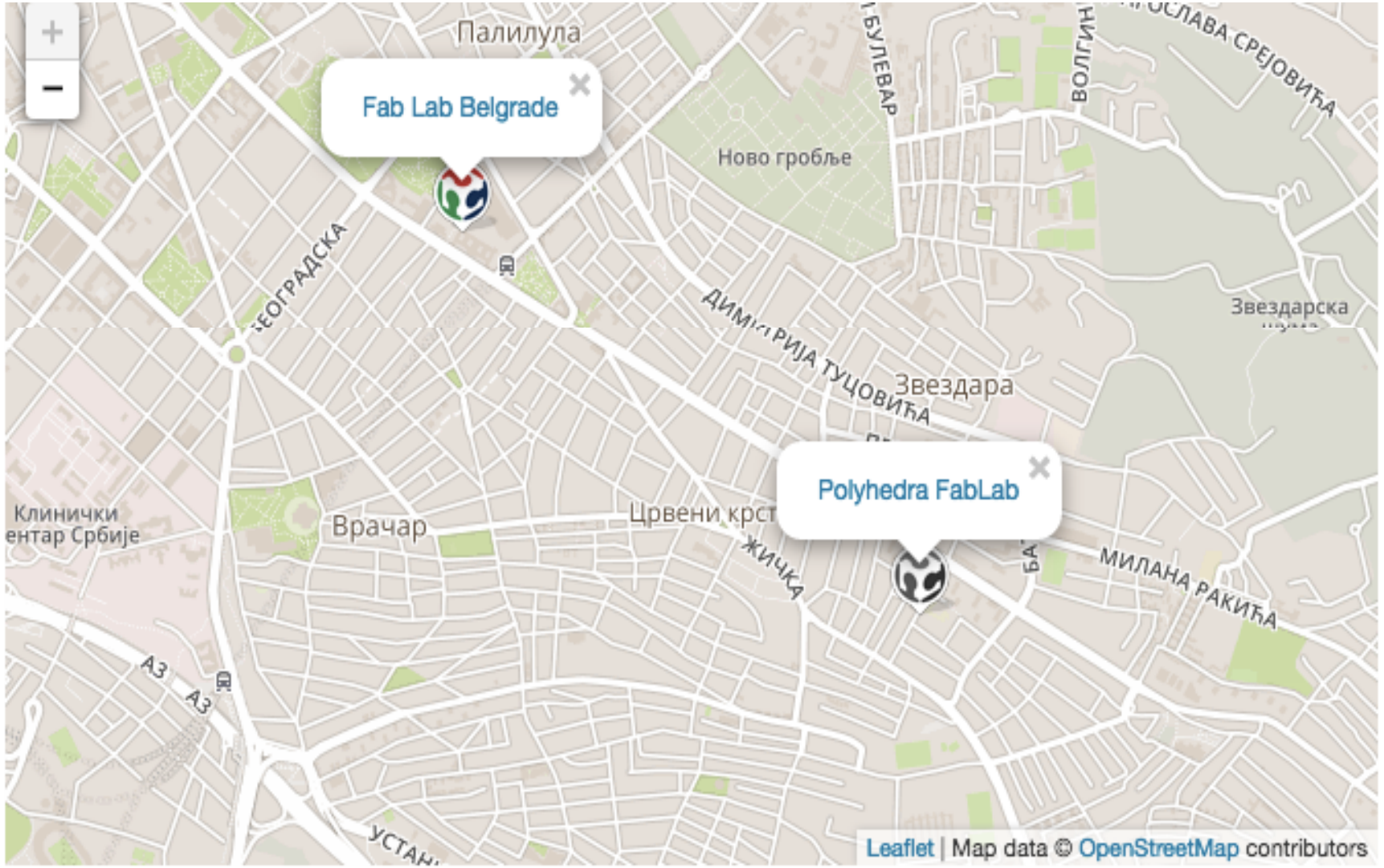
- **Problem:** **2/3 of schools** in Serbia **do not have science labs** and cannot perform scientific experiments with students

- **Problem:** Youth unemployment rate (**49.4%**)
  - lack of experience and contacts to the business
  - lack of equipment for product development
- **Solution:** Fab labs!

Fab labs in the SEE region: before 2015



2015: Building the fablab network. Belgrade, Serbia



FAB
LAB
BGD

FAB
initiative

POLYHEDRA
DESIGNED TO CREATE

non-profit association, established for promoting fab lab concept & STE(A)M entrepreneurship in Serbia and the region, founded in 2013

FAB initiative

www.fablab.rs

@FabInicijativa

FAB initiative

IVANA GADJANSKI

a geek. a biologist. PhD in Neuroscience, Fulbright & TED Fellow, working in the field of stem cells and tissue engineering in the Innovation Center at Faculty of Mechanical Enginering, University of Belgrade, assistant professor at Metropolitan University, poet
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ZORANA KURBALIJA NOVICIC

Enthusiast.
Biologist, PhD in Population genetics, Science communicator, Lecturer. Working in the field of conservation genetic, genetic diversity and genetic adaptation to changing environments.
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(Fab In) Creative Co-Director

Danko Radulovic

Designer, 3D printing guru, master from ENSCI – Les Atelier, France

Danko Radulović was born in Belgrade in 1986. He graduated from the Faculty of Applied Arts, Department of Interior and Furniture Design. Throughout the years he participated in numerous competitions and exhibitions and recorded significant success.
During 2009 he won the first prize for interior and furniture design of a hotel room for the Serbian company Dallas. Then in 2010 he exhibited at the design festival D-Day in Zagreb, Croatia. The same and following year he participated at the Ghost Project exhibition in Belgrade, Serbia. In 2011 he exhibited at the Belgrade Furniture Fair and Belgrade Design Week. In addition, he organized a group exhibition Bloodesign at the Youth and Cultural Center in Belgrade, Serbia. He participated at the exhibition "Comb and relax bicycle" in New Belgarde Municipality with the preliminary design for the design of the booth – rest area for cyclists. The work was awarded and it is now in the preparatory stage before construction His main interests include interior and furniture design.

(Polyhedra fab lab) - Workshop Manager

Borko Jovanovic

Mechanical engineer/entrepreneur founder of Polyhedra fab lab

POLYHEDRA
DESIGNED TO CREATE

Fab Lab Petnica – educational fab lab

Project ”Formation of Fab lab Petnica” (2015-2016) was lead by Fab Initiative, with 2 partners: Science Center Petnica and Belgrade Metropolitan University

Financial support by the Royal Norwegian Embassy in Serbia

AIM:

- To teach young people and their teachers in Serbia how to **adopt hands-on approach for STEAM subjects** with small amount of money (with low-cost DIY fab lab tools)
- To show that fab lab activities can be **used to foster entrepreneurial thinking** and kickstart setting up of the new business by the young people in Serbia

Fab Lab Petnica - a hub that provides:

- Knowledge & inspiration
- tools and industry connections

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UNIVERZITET METROPOLITAN BEOGRAD

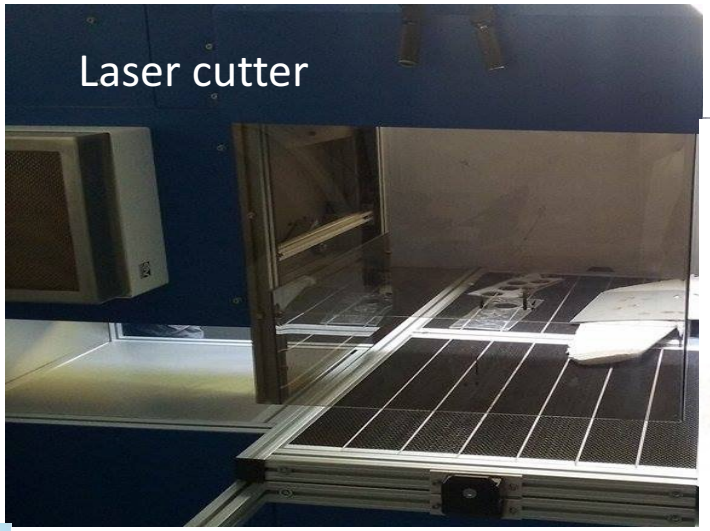
Petnica

Petnica Science Center

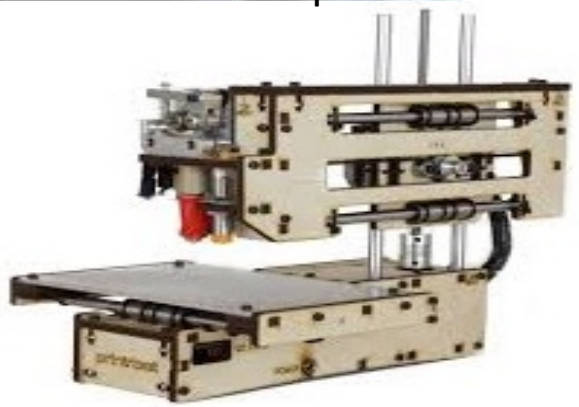
the biggest and the oldest (since 1982) independent nonprofit organization for extracurricular, informal science education in South Eastern Europe

Fab Lab Petnica - formation

Zcorp 3D printer


Laser cutter

Printrbot 3D printer
Simple Maker Kit

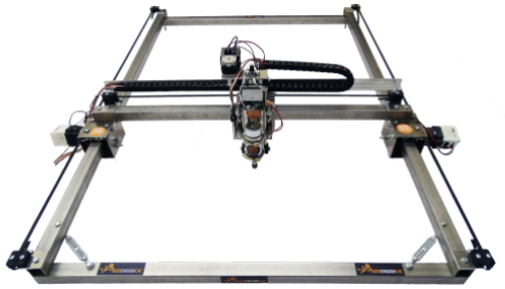


DIY lab ware

GOODENOUGHCNC HYBRID

VERY LOW COST DESIGN

GoodEnoughCNC hybrid is built from standard mechanical components and steel profiles, which makes it affordable. Just basic handtools needed for assembly.



TRANSFORMABLE

Using different machining toolheads - hand-held plasma torch, a spindle, laser or some other tool GoodEnoughCNC hybrid can transform from plasma cutter to cnc mill or laser cutter.

MODULAR DESIGN

Suitable for almost any application referring to the size

OPEN-SOURCE AND OPEN-HARDWARE

Published under open-source

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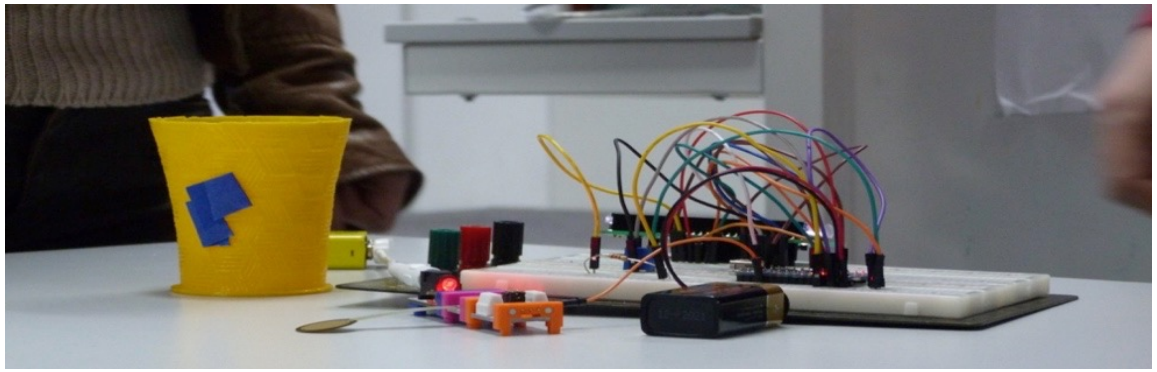
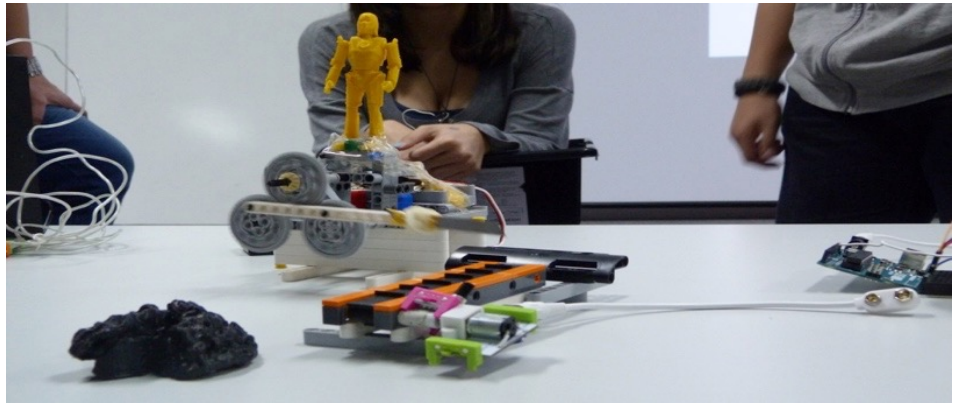
Fab Lab Petnica – student courses Nov 2015





Fab Lab Petnica – pitching competition

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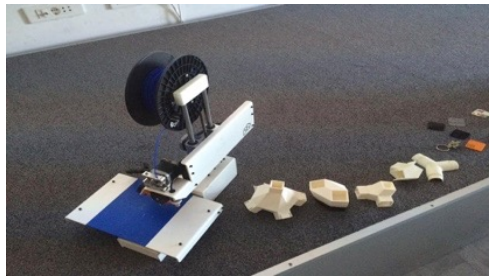
Fab Lab Petnica – teacher courses April 2016



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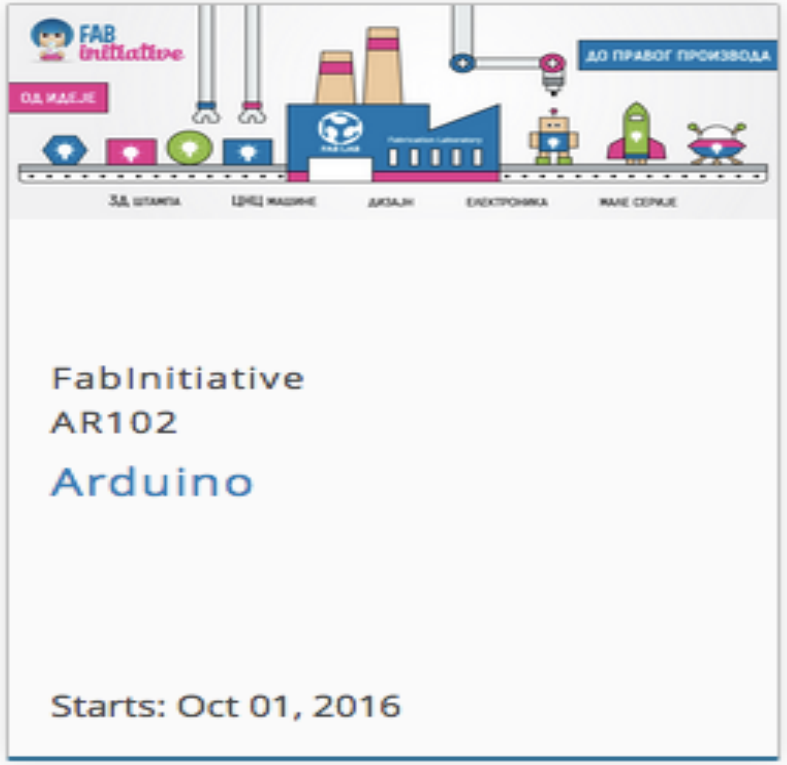
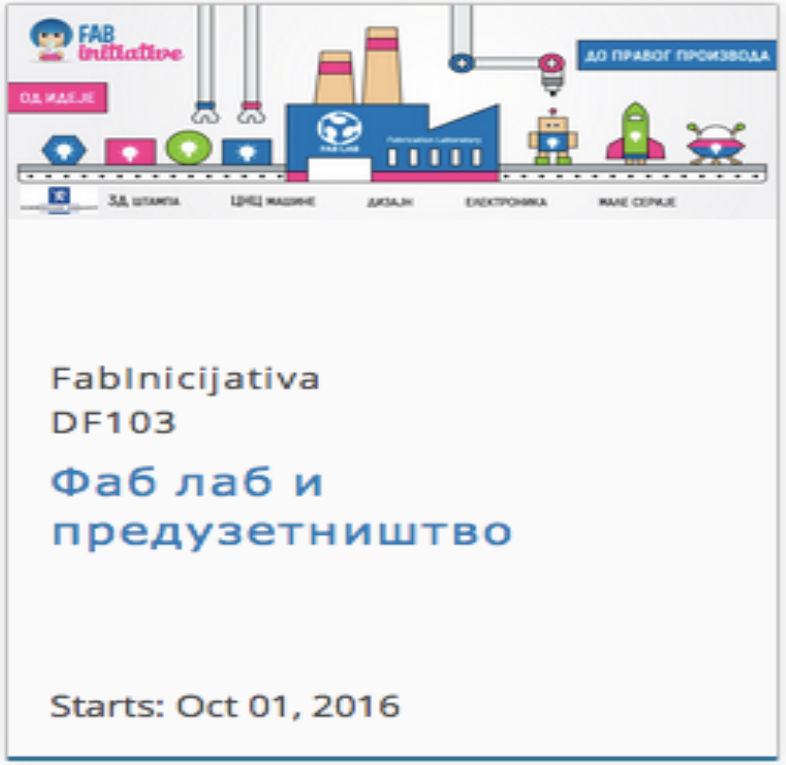
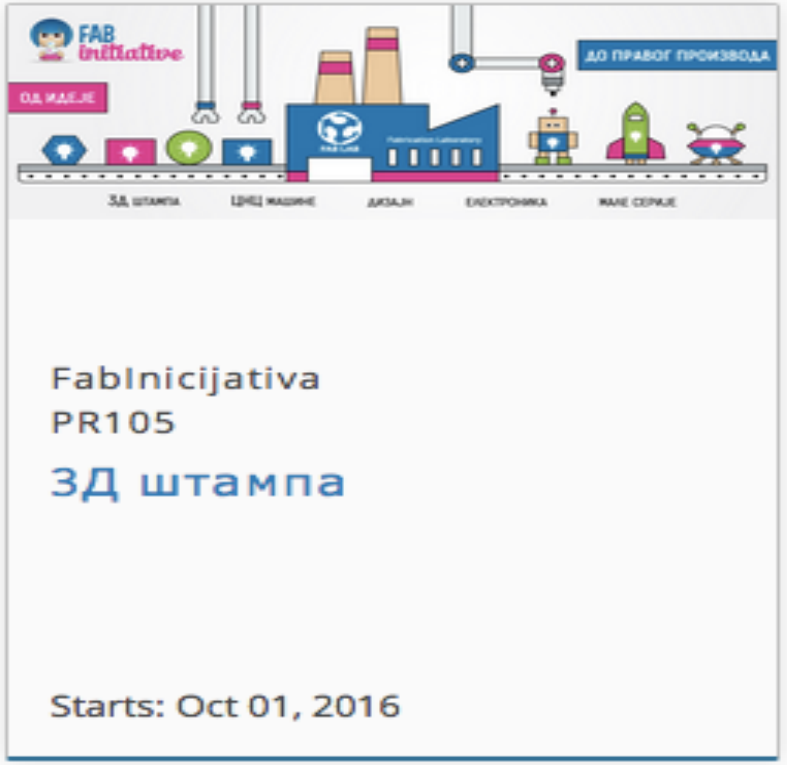
FAB LAB PETNICA – TEACHER & STUDENT COURSES
OCTOBER 2016

Fab lab petnica online edx course







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https://edx.metropolitan.ac.rs

FAB initiative

HTTPS://WWW.FABLABS.IO/FABLABPETNICA

Search.. Labs Orgs Machines Projects Discuss Sign in Sign up

Labs / Serbia / Fab Lab Petnica

Fab Lab Petnica

[Fab Lab]

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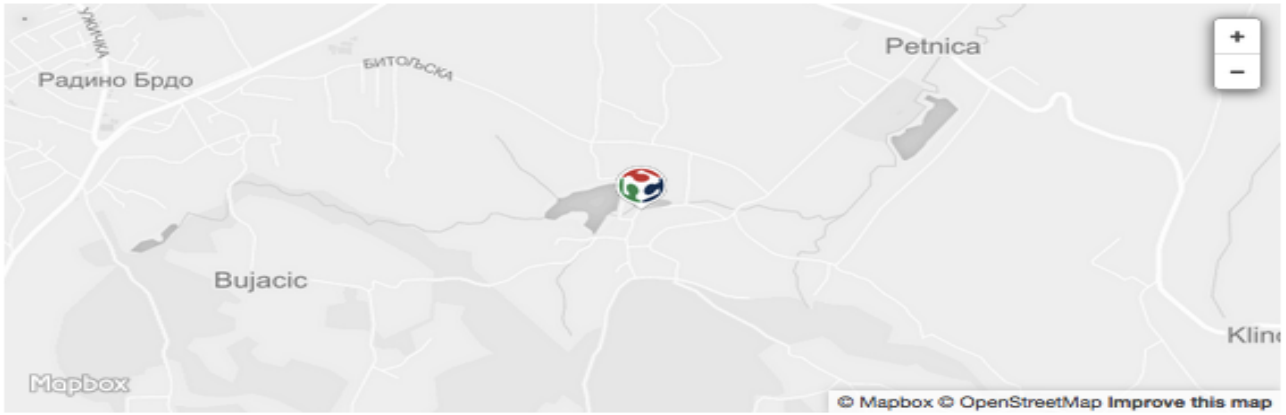
kontakt@fablab.rs



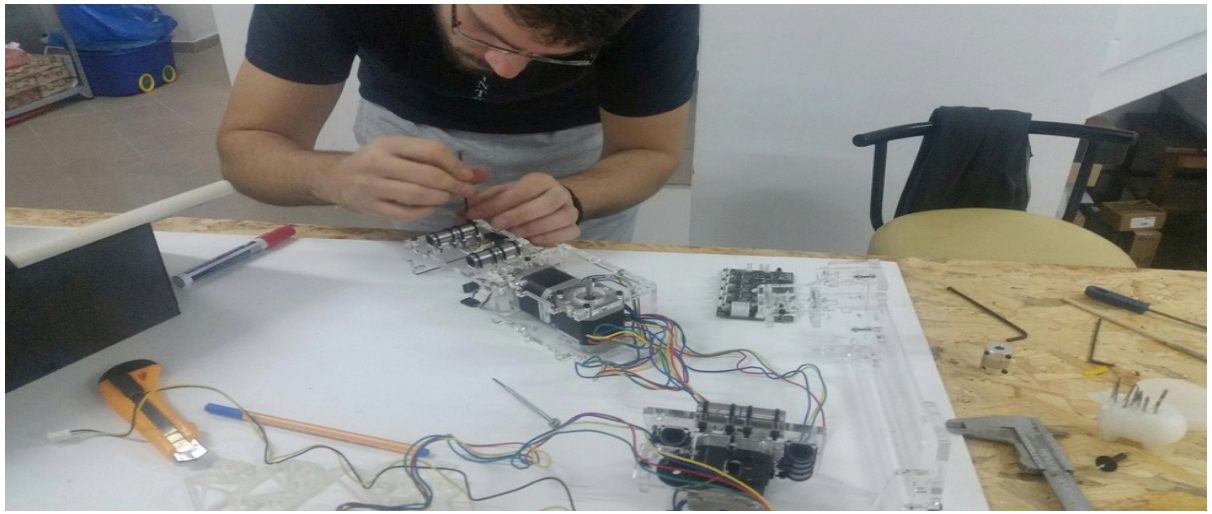
Fab Lab Petnica is an educational fablab established within the Petnica Science Center with the aim to provide high school students and teachers in the STEM (science, technology, engineering, math) field in Serbia with knowledge, tools, inspiration and connections to start implementing the FabLab@School concept and STEM entrepreneurship principles in practice.

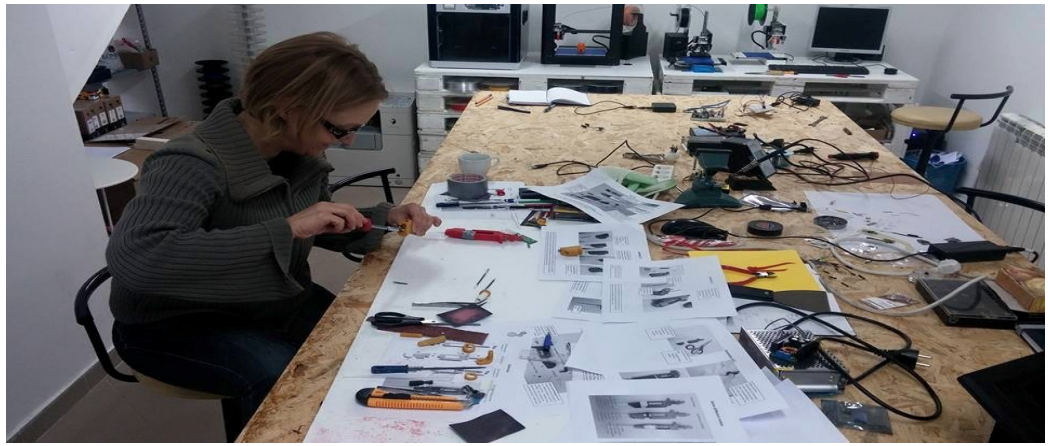
Establishment of the Fab Lab Petnica is financially supported by The Royal Norwegian Embassy in Belgrade www.norveska.org.rs

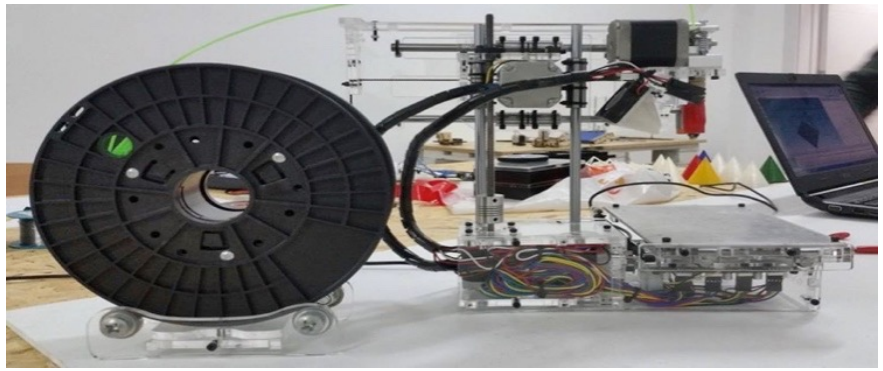
nearby_labs

- Polyhedra FabLab — 76km away
- Fab Lab Belgrade — 76km away
- Devana Labs — 76km away
- ProDe — 212km away
- Smart Fab Lab — 326km away

Polyhedra fab lab; Belgrade working with







www.fablabs.io/polyhedra

POLYHEDRA
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Open source 3D printed wired limb

Vladimir Sipka
Borko Jovanovic

Working on finger activation through electronics – myoelectric contraction

BACKYARD BRAINS

FabIn collaborators in fab lab network

Europe

- Poligon Maker Lab, Slovenia
- Institut IRNAS Rače, Slovenia
- FabLab Croatia
- Fab Lab Athens
- Fab lab Budapest
- Fab Lab Graz
- The Waag Society (Creative Learning Lab)
- Fab Lab ErpeMere (Belgium)
- FabLabFactory startup (Belgium)
- Innocampus mobile fablab -Turkey
- **FabLearnEurope – conference on digital fabrication in education**

Africa

- **Emeka Okafor**, **Founder at Maker Faire Africa**; strategic advisor at African Innovation Association
- **Maarten Van Herpen** – Innovation Director Africa, Strategy& Business Dev. **Philips Africa**
- Smart Hub for Tech Entrepreneurs in Madagascar

FABelgrade 2016 -1st regional conference on digital fabrication and fab lab concept in South East Europe –www.fabelgrade.io - May 14-15th, 2016

- **2-day event, app. 800 visitors, 30 speakers from 18 countries**
- **Interactive lectures and practical demos in the fab lab built on the premises**
- **EC JRC workshop "Why and how to build a fablab" organized on the sidelines:**

https://ec.europa.eu/jrc/en/event/workshop/why-and-how-build-fablab

FAB FACTORY

MAY 14TH TO 15TH
BELGRADE, SERBIA

waag society
creative learning lab

WWW.FABELGRADE.IO

fabelgrade

1ST REGIONAL CONFERENCE ON FAB LAB CONCEPT AND DIGITAL FABRICATION

Organizers

FABinitiative · POLYHEDRA · FAB LAB BGD

Patron

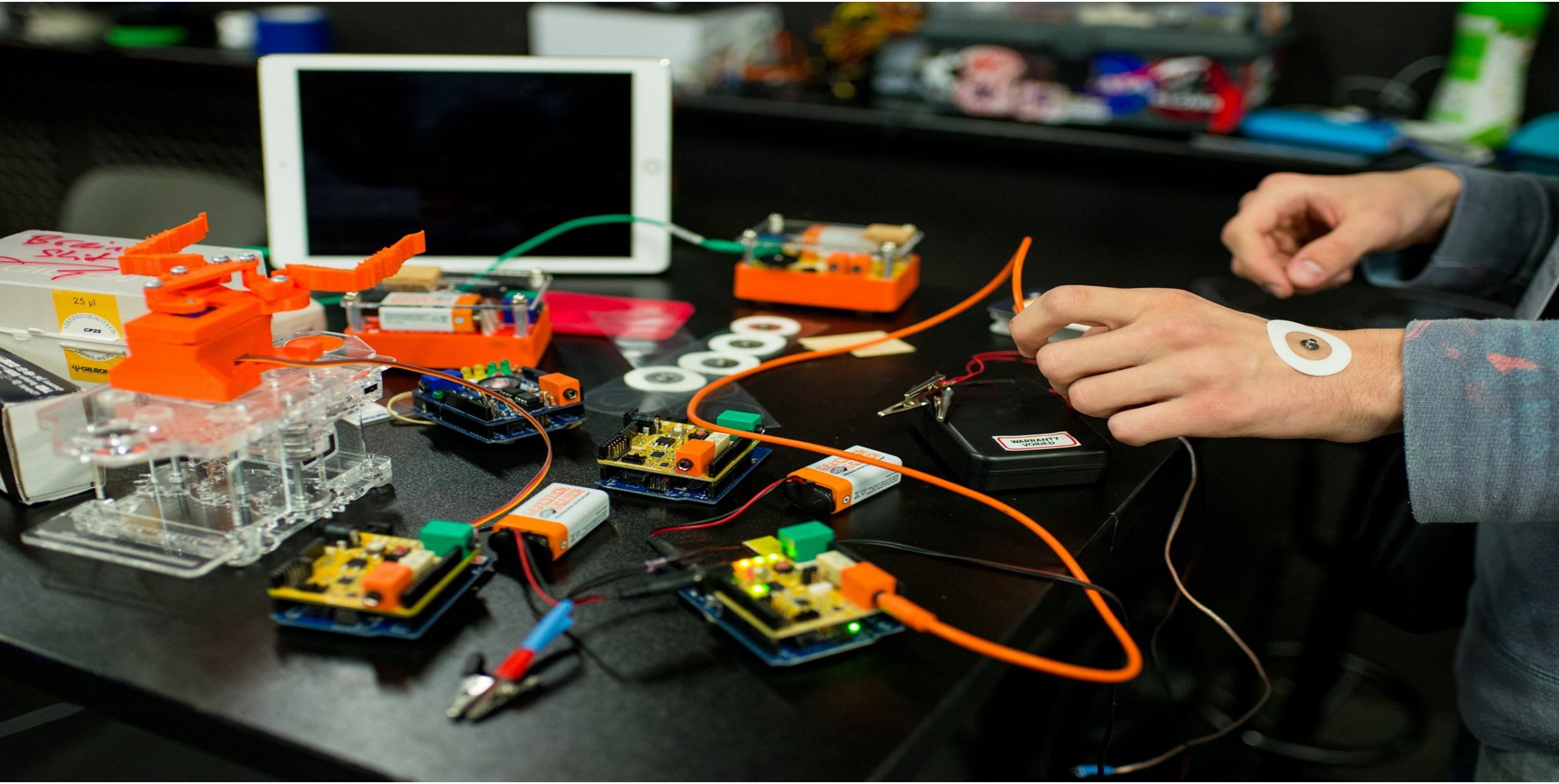
www.fabelgrade.io

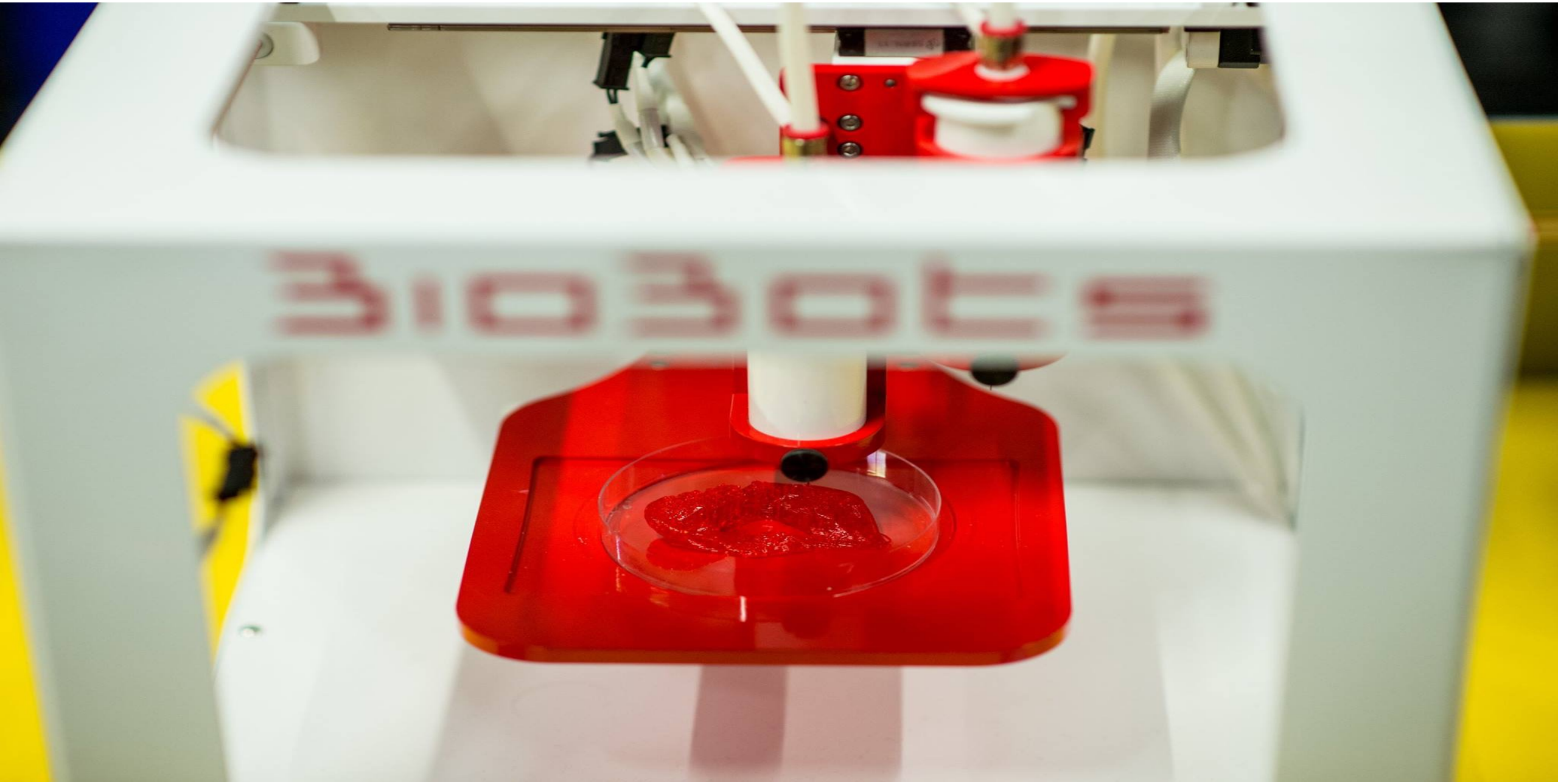
inno campus
POLIGON MAKER LAB
rnas

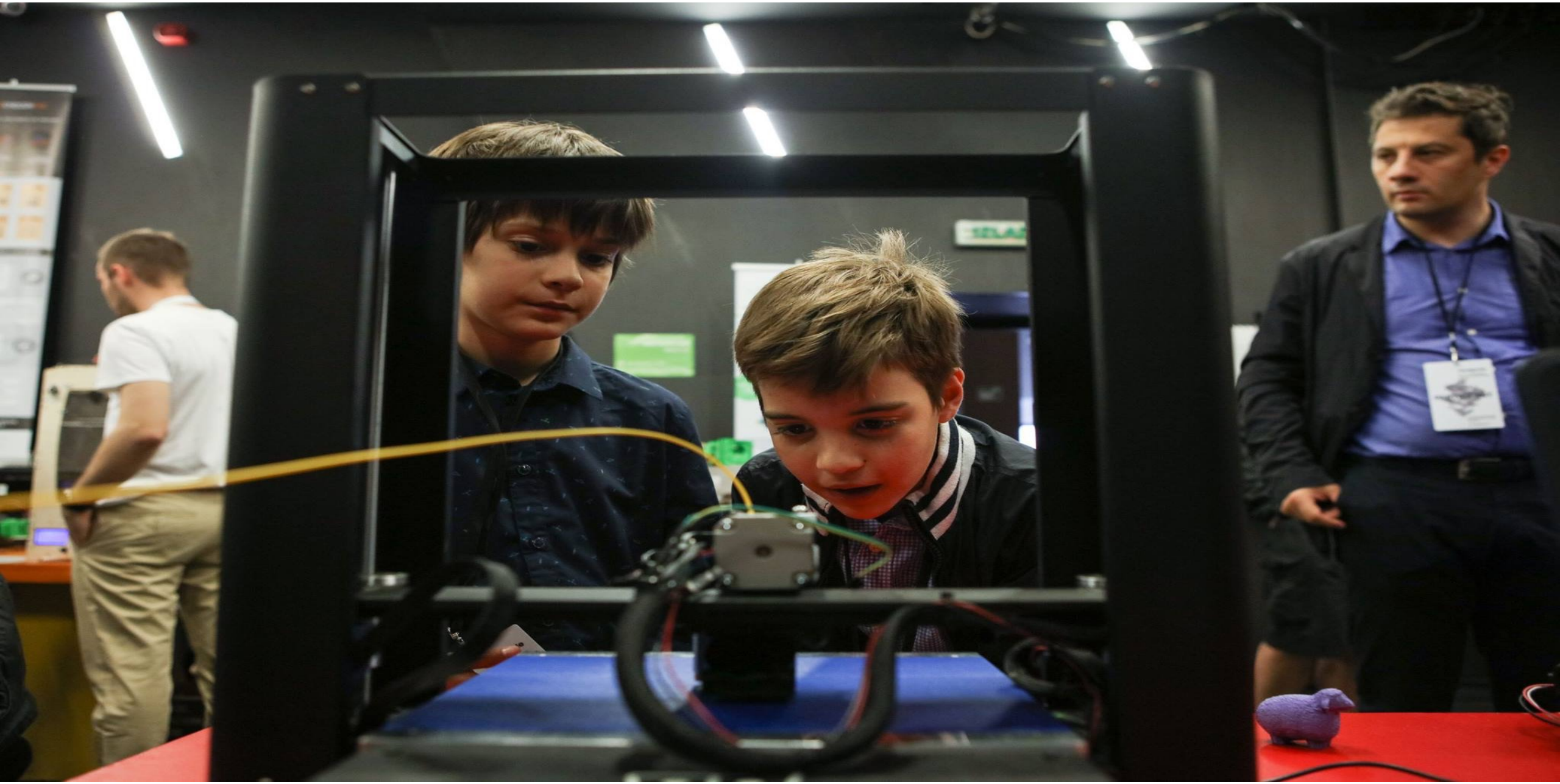
Smart FabLab
FABLab Graz, Austria
FabLab Budapest
FabLab.hr
fablab Athens

Adrian Bowyer – RepRap Project founder

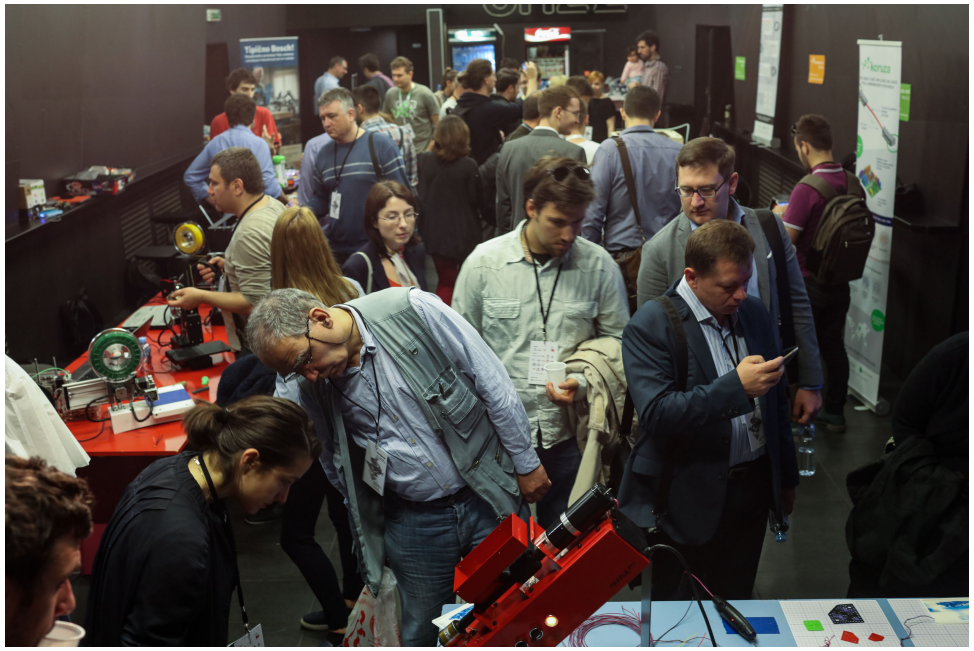
http://fabelgrade.io/speakers/

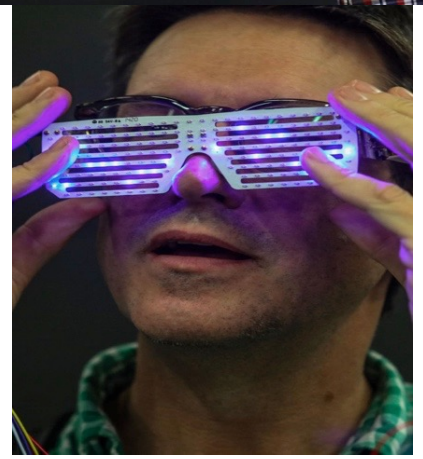

2.5 µl
CP25
WARRANTY VOIDED


BioBots



Fulbright Alumni presenting at FABelgrade 2016



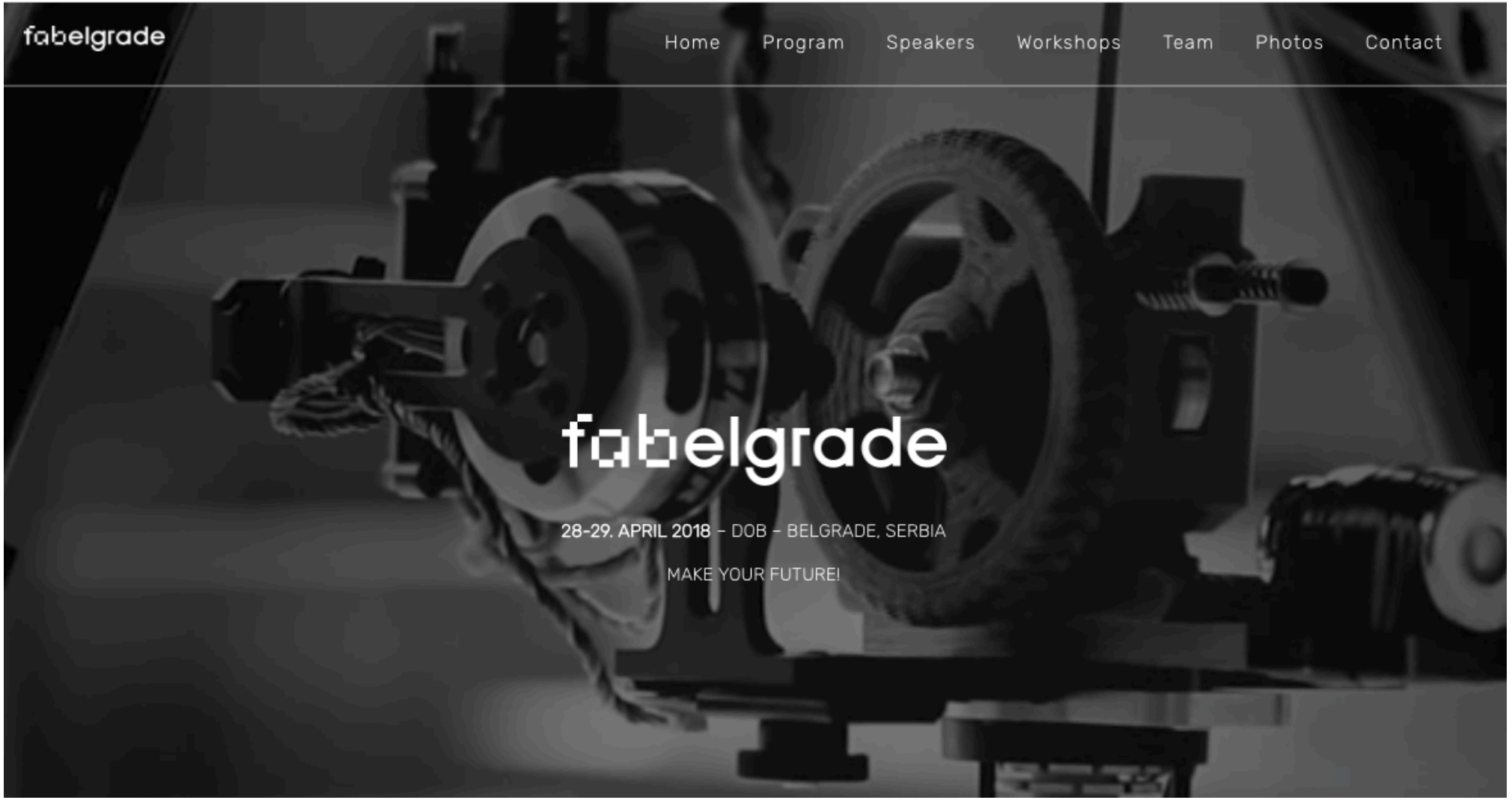


www.fabelgrade.io

Fab Economy panel

Regional fab labs panel

FABelgrade 2018 **28-29. April 2018**



www.fabelgrade.io

Thank you

Fab Initiative

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