



10th INTERNATIONAL FAB LAB CONFERENCE

**BCN 2-8 JULY
2014**

FROM FAB LABS TO FAB CITIES

Digital
Manufacturing

Emerging
Communities

Productive
Cities



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FAB10: 10th International Fab Lab Conference
Barcelona, July 2nd - 8th, 2014

FAB10 BARCELONA

This year the great international event for digital manufacturing comes to Barcelona

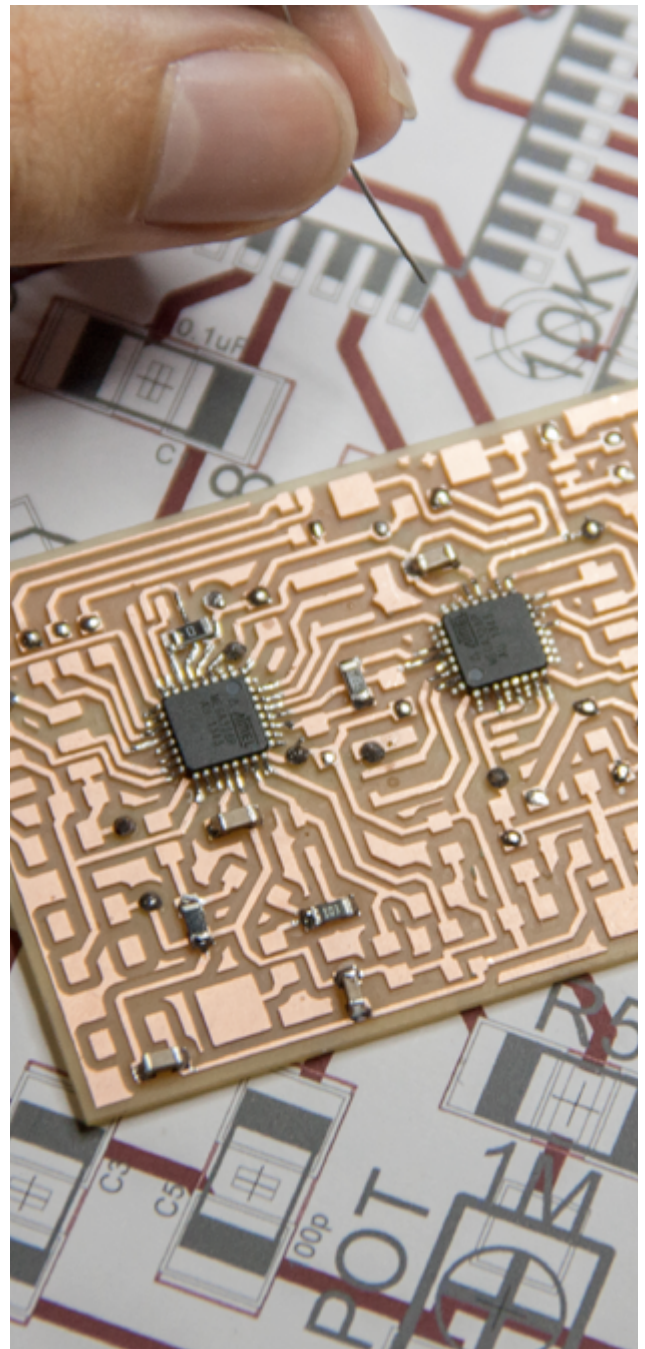
Over **300 labs** for digital manufacturing from 50 countries
Over **5.000 visitors and 50 workshops** in the Fab Festival
Over **1.500 visitants** in the Symposium

FAB10 is going to convert Barcelona into the largest Fab Lab in the world. The international digital manufacturing event is going to be held this year in Barcelona from 2 to 8 July. The Disseny Hub will be where international experts, local businesses and people from Barcelona can share their knowledge by means of dialogue and seminars, as well as learning about digital manufacturing.

FAB10 is made up of events that everybody will enjoy:

- **Fab Festival:** a weekend open to everyone so they can enjoy and experience digital manufacturing first-hand.
- **Fab Kids:** a digital manufacturing summer workshop aimed towards the youngest members of the family.
- **Symposium:** a conference that lasts a whole day with digital manufacturing experts from all over the world.
- **Daily Meetings** held by over 300 Fab Labs.
- **Global Fab Awards:** A competition that awards prizes to the most innovating projects presented by the more than 128 Fab Labs.

Barcelona is the leader in digital manufacturing, setting up the first Fab Lab in the European Union in 2007. Initiatives such as manufacturing Athenaeums are also being created. During the FAB10, there are plans to discuss the creation of the Fab City: the productive and self-sufficient city.





DIGITAL MANUFACTURING FROM THE LAB TO THE CITY

What kind of revolution does digital manufacturing imply?

We have gone from bits to atoms

The great revolution is that the digital world has entered into the physical world. Digital manufacturing means bringing objects that have been created by computer into the world. We have gone from bits to atoms, to matter.

International design, local manufacturing

Goods used to have to travel but today, thanks to digital manufacturing, it is the information that travels. The value does not lie in the object, but in knowledge.

From consumer to producer

Production goes from an industrial environment to a personal one. Very soon every home will have its own 3D printer and you will be able to manufacture anything from a cup to even an ear. Digital manufacturing involves socialising knowledge and granting people with power.

Workers of knowledge

We are living a new technological alphabetisation. Future professions will be linked to knowledge and the access to manufacturing and entrepreneurship will be more democratic. Years ago it was impossible to generate stock without capital but nowadays, with digital manufacturing, you can make prototypes cheaply and produce only what you need.



FROM THE LAB TO THE CITY

What will the cities of the future be like?

They will be self-sufficient

Thanks to digital manufacturing there will be self-sufficient buildings, with green roofs that are capable of creating energy, and in 50 years' time we will be able to construct buildings which can be assembled and dismantled again.

We will use more **km 0 resources**, build sustainable buildings and encourage energy saving. Barcelona produces 5% of the energy it consumes. In 50 years' time it will produce 80%.

The mobility of the future in cities lies in sharing and using **public transport**. The amount of surface dedicated to citizens will increase.

They will be productive again

The access to knowledge and technology will cause industry to return to cities. This will create new jobs and cities will be productive again. Today, only 3% of the things consumed in Barcelona have been manufactured locally. The aim is to exceed 50%, thanks to digital manufacturing.

We will recycle everything

The great challenge is to implement circular economy. There should be no need to obtain raw materials in Africa, build in China and buy in Barcelona. We will manufacture locally. Products will not be allowed to die, but will be transformed to produce new uses. Today there are workshops in Barcelona to digitally manufacture from recycled materials.



Barcelona is the leader

Barcelona used to be an important industrial city. Urban planning was invented with Ildefons Cerdà and today, thanks to the laaC and FAB10, Barcelona is promoting the debate about what cities will be like in the future. Barcelona is the first city that has declared it wants to be self-sufficient.



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TUESDAY 1 WD 2 / TH 3 / FRY 4 SAT 5 / SUN 6 MON 7 / TUE 8

DAILY MEETINGS	8.30h a 10h reception	8.30h a 12.30h Morning meetings 14h a 16h Afternoon workshops 14.30 a 18.30h 19h - Fab Lab Tours			
FAB KIDS		9h a 14h Summer Workshop		9h a 14h Summer Workshop	
FAB FESTIVAL			All day - Talks All day - Workshops All day - Demos Fab Condenser Fab Car		
SYMPOSIUM				All day event	
CLOSING CEREMONY					All day event
FAB CONDENSER					
GLOBAL FAB AWARDS					
FAB CAR					



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PROGRAMME OF ACTIVITIES

FAB10 will convert Barcelona into the biggest Fab Lab in the world, with expositions and activities designed for all ages.

FAB10 Barcelona, From the Lab to the City.
From 2 to 8 July, in Disseny Hub Barcelona
(Plaza de las Glorias Catalanas 37-38).

Fab Festival. Fab Window Display and activities

This meeting held by the members of the Fab Lab international community and the local community of innovators also opens its doors to all citizens. During the weekend of 5 and 6 July, adults and children are invited to enjoy the conferences, workshops and activities organised by the local creatives.

Fab Kids. Learning through play

Educational workshops for boys and girls aged between 12 and 17 where they can play, experiment and learn how to manufacture small robots, build their own skateboard, carry out interactive experiments or print in 3D. The idea of learning-by-doing forms the operational basis of the Manufacturing Athenaeums and is the best introduction to technological tools.

Organised in collaboration with the Ateneo de Fabricación of Les Corts and Ludic3.

Daily meetings. Exchanging knowledge

Every day the international Fab Labs will meet up to exchange experiences in small-scale conferences and workshops.

Fab City Symposium. Conferences and debates

On 7 July there will be a meeting of international experts in digital manufacturing, with the presence of Neil Gershenfeld, Bill McDonough, Ellen MacArthur, Massimo Banzi, Paul Eremenko, Vicente Guallart, Achim Menges and Hannah Jones, who will bring us closer to the sector's new features. The Mayor of Barcelona, Xavier Trias, will also be attending.

World Fab Condenser. The challenge of building a house live

The most spectacular act in FAB10 is probably the World Fab Condenser, a house produced and built live throughout the week of the symposium. Created by the IaaC, it is the third World Fab Condenser prototype, a collaborative project carried out by universities and Fab Labs from around the world.

Fab Car. A custom made vehicle

During the FAB10, Fab Lab Barcelona will be setting out to design a concept car based on the needs and desires of the Fab Lab and Maker communities.

Global Fab Awards. A prize for innovation

A competition organised by the Fab Foundation, World Bank, US AID and Intel that awards prizes to the most innovating projects from those created within the Fab Lab ecosystem. The projects will be on display throughout FAB10.



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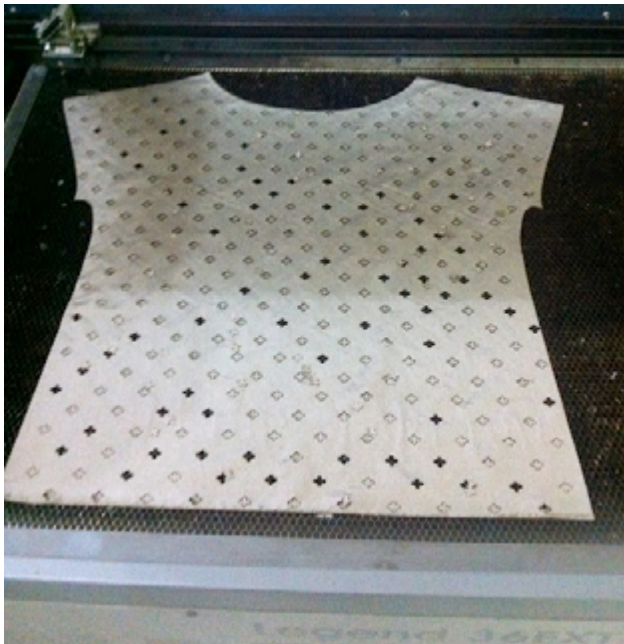
FAB FESTIVAL

Fab Window Display and activities

During the weekend of 5 and 6 July, FAB10 opens its doors to anyone who wants first-hand knowledge of digital manufacturing, offering conferences, workshops and activities. Local and international companies will present their projects to the whole community.

The digital manufacturing festival is open to people of all ages. Children and adults will be able to experience how small disruptions are changing the world. Today there are no limits to what can be made, and the Fab Festival is a small demonstration of what can be done. 3D food printing workshop, made-to-measure shoe production, printed prosthetic hands, etc.

Tickets available at entrades.timeout.cat.



HIGHLIGHTED WORKSHOPS

https://www.fab10.org/ca/events/fab_festival

Flone, with Alexandre Oliver

Aeracoop - 5 and 6/7 10-13h

The workshop will consist in discovering the history of the project for transforming smartphones into drones. Later each participant will be shown the steps for building their own flone.



Foodini, with Javier Peña

5/7 10-13h

Introduction to cooking with 3D food printers.



Kuluska, with Naoki Pujimoto i Aya Fujimoto

5 and 6/7 10-13h

With the idea of manufacturing shoes that adapt to each foot, this workshop offers a slipper design that can be modified according to the consumer's taste.



e-NABLE 3D, with Kachina Gosselin and Jon Schull and 3D Print Barcelona

5/7 12-15h and 6/7 14-17h

After an explanation about how this network of voluntary workers uses 3D printers to make prostheses for children and adults without hands, there will be a demonstration of the procedures involved in the manufacturing process.



SmartCitizen, with Guillem Camprodon

Fab Lab Barcelona

5 and 6/7 13-16h

A workshop with environmental monitoring and global technology sensors, where participants can see in real time the changes that take place in the spaces where the system is implemented.

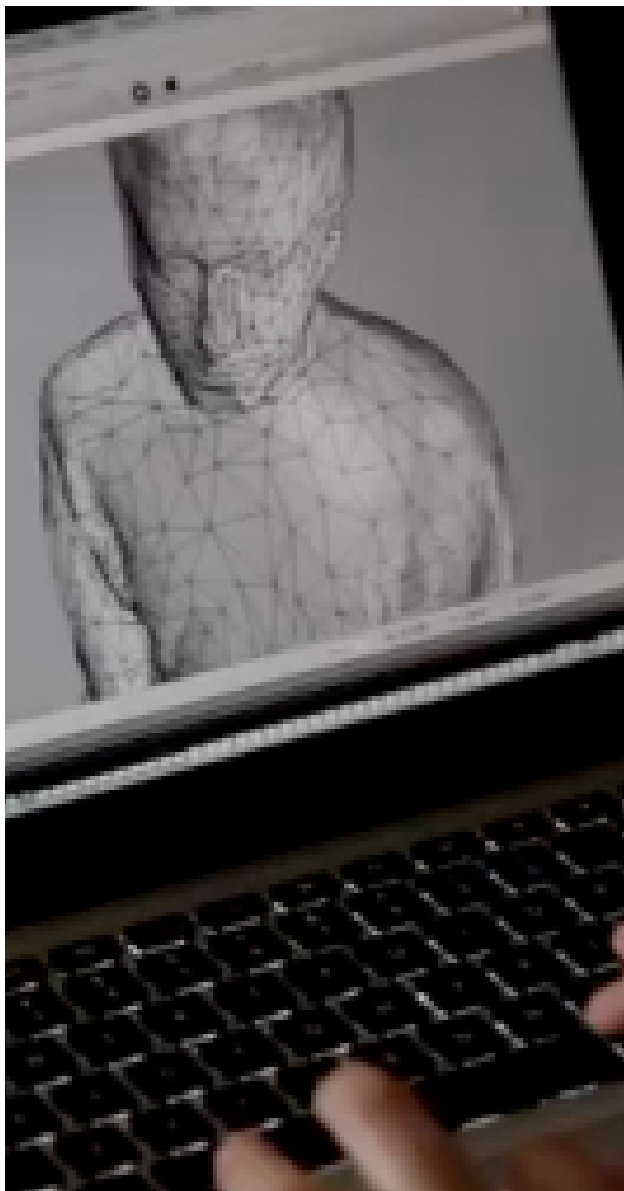




FAB KIDS

Learning through play

Fab Kids is the digital manufacturing summer camp held within the FAB10 framework from Wednesday 2 July to Friday 4 July, and from Monday 7 July to Tuesday 8 July. Girls and boys aged between 12 and 17 will be able to enjoy different educational workshops where they will learn how to manufacture small robots, build skateboards, carry out interactive experiments, scan and print in 3D, do laser cutting, mould and rout, participate in a conductive ink workshop... Teaching through playing and experimenting is one of the aims of this edition of Fab Kids, which sets out to promote the Fab Labs' values by means of the "learn by doing" formula.





FAB KIDS ACTIVITIES

CONDUCTIVE INK WORKSHOP

This three-hour workshop introduces the participants to the principles of electronics. By means of conductive ink, children will learn how to make simple circuits in a fun fashion.

By the end of the day, the participants will have created different elements that generate sounds when the ink is touched.

LASER CUTTING

In this workshop that lasts three hours participants will learn the basic principles, uses and applications of laser cutting and engraving. They will find out how to use the machines employed for these techniques, such as Epilog and Trotec, by way of a group session which will enable them to understand the scope of this type of digital process. The children will take photographs to engrave them in wood with the laser cutter. Likewise, they will cut the engravings in the predesigned pieces that make up an installation.



MOULDING AND ROUTING

This workshop lasts three hours and introduces and explains how to handle and use a low-scale “Roland Modela MDX – 20” milling machine. As a result, children will have the opportunity to make their own moulds and rout them with quick-drying materials via the “Modela” programme, obtaining different shapes and colours. This activity enables participants to handle a digital model and manufacture it using the milling technique, thus obtaining a mould with which the routing activities will be carried out, using digital manufacturing to transfer the digital world to the physical one.

3D SCANNING AND PRINTING

This three-hour workshop enables participants to experience the concept of multi-scale. They will be able to discover and understand that the new 3D scanning processes are capable of translating any physical element to a digital one without the scale of the object mattering (from scanning an extension of land to a drinking glass).





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DAILY MEETINGS

Exchange of knowledge

During the first few days of FAB10 (from 2 to 4 July) over 300 digital manufacturing labs from 50 countries around the world are going to meet up in Barcelona, converting the city into the biggest Fab Lab in the world, where the future is being invented. During these days, the international Fab Labs are going to get together to exchange experiences in small-scale conferences and workshops.

The international guests will also be able to see the different facilities that exist in Barcelona, such as the Digital Manufacturing Athenaeums, promoted by the City Hall. These places, one in Les Corts and the other in the Meridiana, are spaces for creating and learning where citizens can become involved with a digital creation lab.





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FAB CITY SYMPOSIUM

Conferences and debates. Will Barcelona be the first Fab City in the world?

Throughout the whole of 7 July, the main international experts in digital manufacturing will give conferences about their experiences and perceptions for the future. The symposium will be attended by Neil Gershenfeld, the director of the Center for Bits and Atoms (Massachusetts Institute of Technology) and father of the Fab Lab concept, as well as by Massimo Banzi, co-founder of Arduino and Ellen MacArthur, expert in circular economy.

Among other issues, the protagonists of digital manufacturing at an international level will discuss the city of the future: the Fab City: a revolution that will be experienced by the city within the ambit of production, self-sufficiency and the emerging communities. One of the main objectives of the symposium is to consider whether Barcelona, a pioneer in digital manufacturing in Europe, will be the first Fab City in the world.

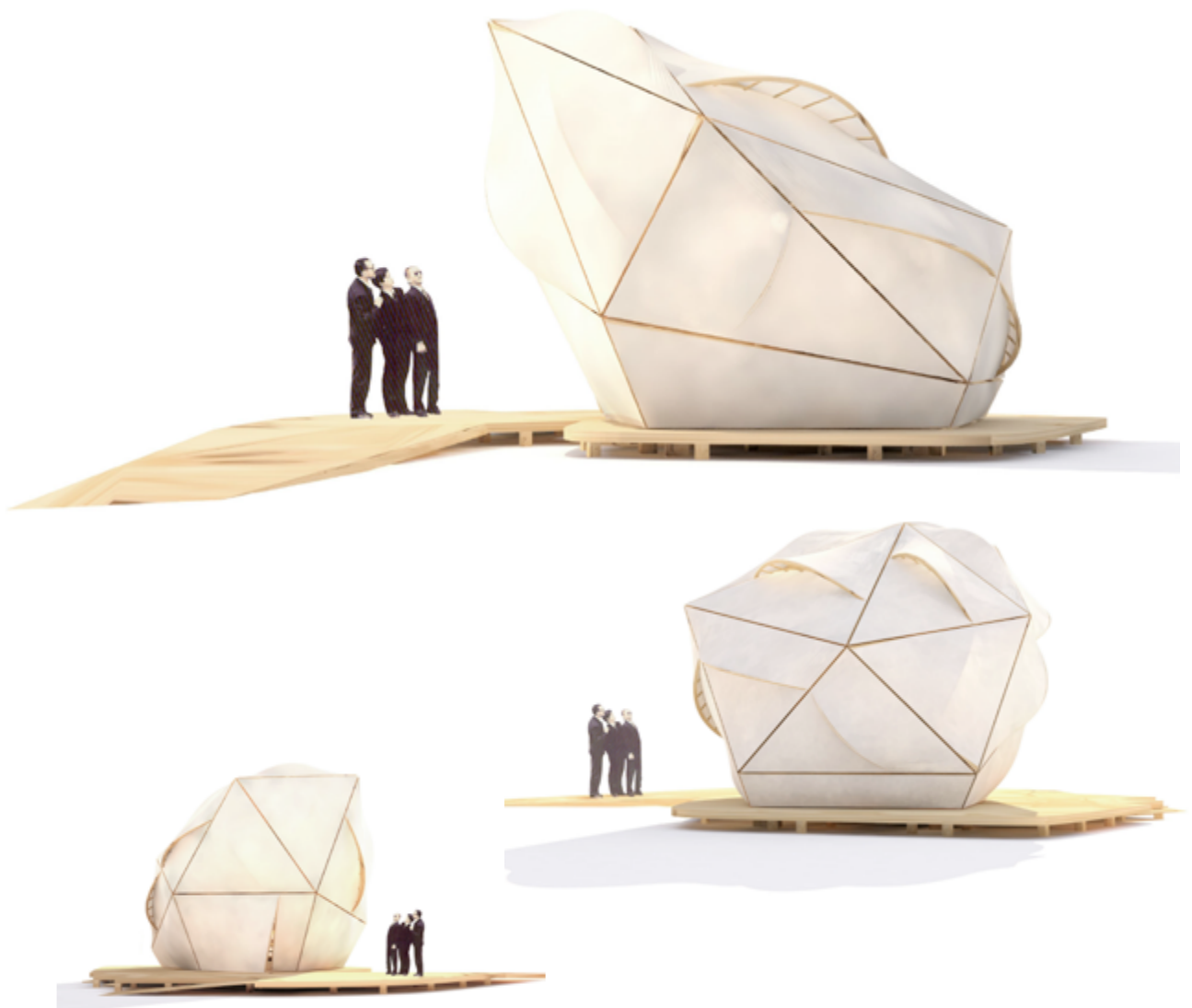


WORLD FAB CONDENSER

The challenge of manufacturing a house. The third prototype in the world

The World Fab Condenser is a house that will be produced and built during the FAB10 week. Created by the IaaC, it is the third Condenser prototype, a collaborative project carried out by universities and international Fab Labs.

The Endesa World Fab Condenser has been designed to capture the principles, ideas and people of the Fab Lab network. It is a small, digitally manufactured pavilion, which will be used by the Fab Lab community as a point of reference. A space created with the collaboration of all the Fab Labs from all over the world. Visitors to FAB10 will be able to see how a building can be manufactured and built in only one week, thanks to digital manufacturing.



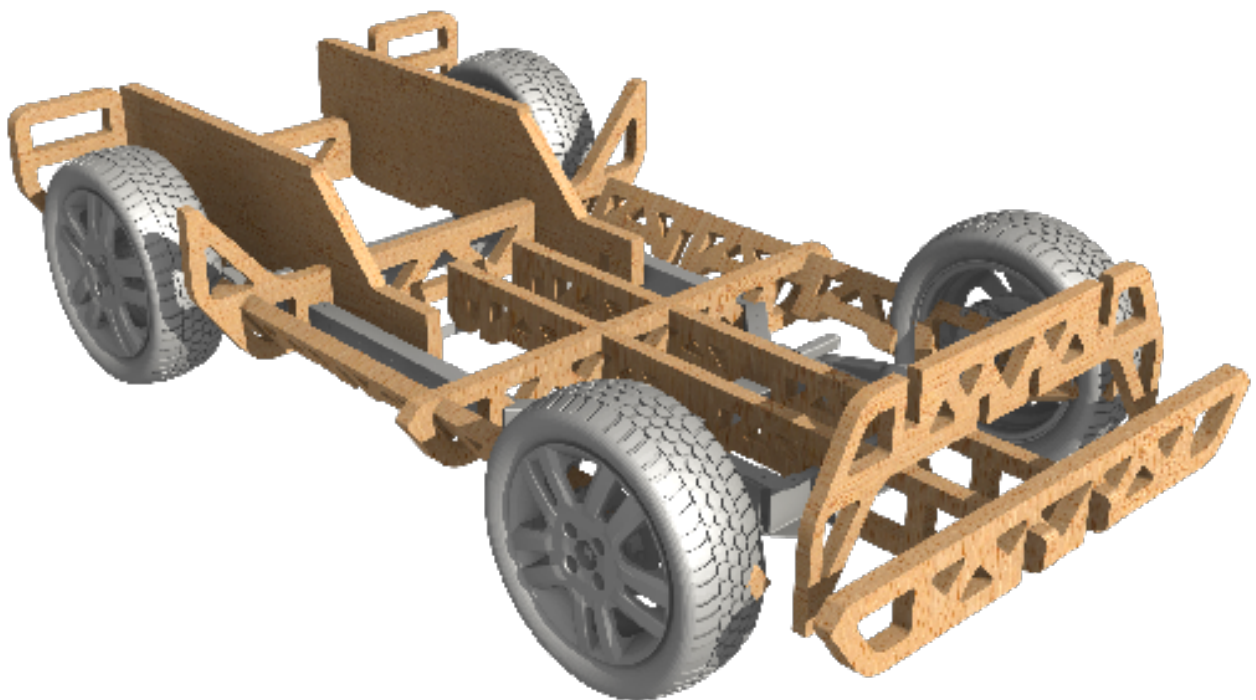
FAB CAR

A custom made vehicle

In collaboration with HP, OpenSource Vehicle and 5 other Fab Labs around the world (Garagem Fab Lab (SP. Brasil), Fab Lab San Diego, FabCafe Tokyo, FaLab Manchester and Vigyam Ashram in India) Fab Lab Barcelona is setting out to design a concept car based on the needs and desires of the Fab Lab and Maker communities.

The vehicle will be based on OSV's open source chassis, the Tabby (OSVehicle.com). Around this we will design and produce the entire body of the FabCar at Fab Lab Barcelona and present the vehicle at the Fab10 conference on July 2nd at Barcelona's Design Museum, DHUB.

Our entire concept for this vehicle revolves around giving people the ability to modify, customise and adapt the vehicle to their specific needs at any given time. In order to do this we have conceived of a system of pods, which anyone will be able to design or download and make themselves at their local lab. Different pods will provide different functionalities, such as a bike rack or mobile Fab Lab.





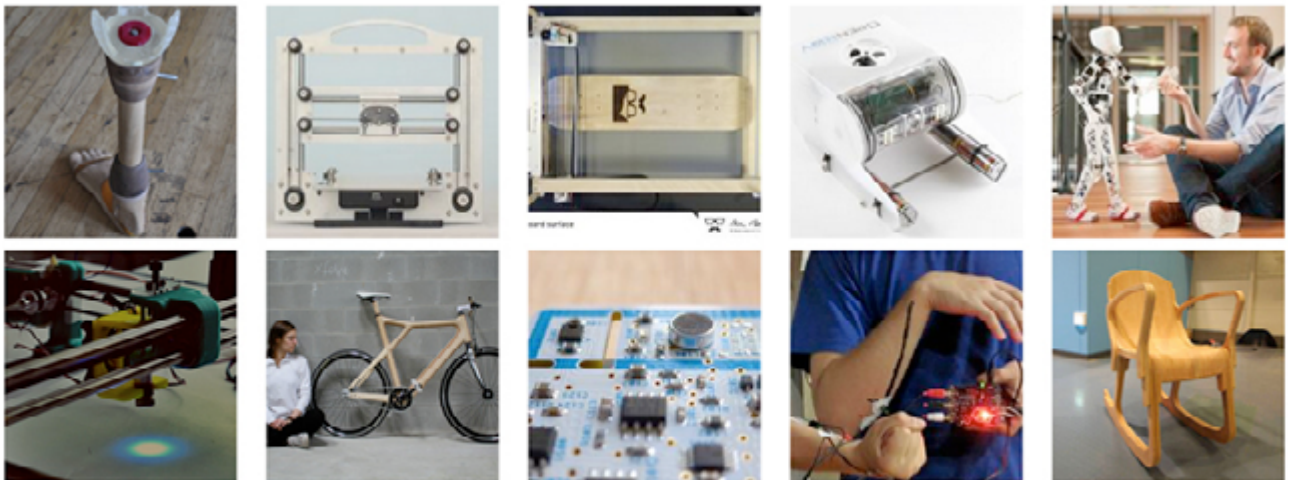
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GLOBAL FAB AWARDS

A prize for innovation

During the FAB10 week the competition for innovating ideas manufactured in the Fab Labs from all over the world will also be held: the Global Fab Awards. The first international competition for digital innovation which aims to bring attention to the disruptive projects that are being carried out around the world. Over 128 ideas have been registered, which will be exhibited during the FAB10 week, and in the closing event on 8 July, the winners of the three categories will be announced: Global Fab Award, Fab Lab Idea Change and Sensors for Global Development.

The objective of this competition is to discover new projects, strengthen local development and demonstrate the potential of digital manufacturing projects. The competition is an initiative of the Fab Foundation with the collaboration of the World Bank, US AID, Autodesk and Intel..



Global Fab Awards
Partners:



THE WORLD BANK



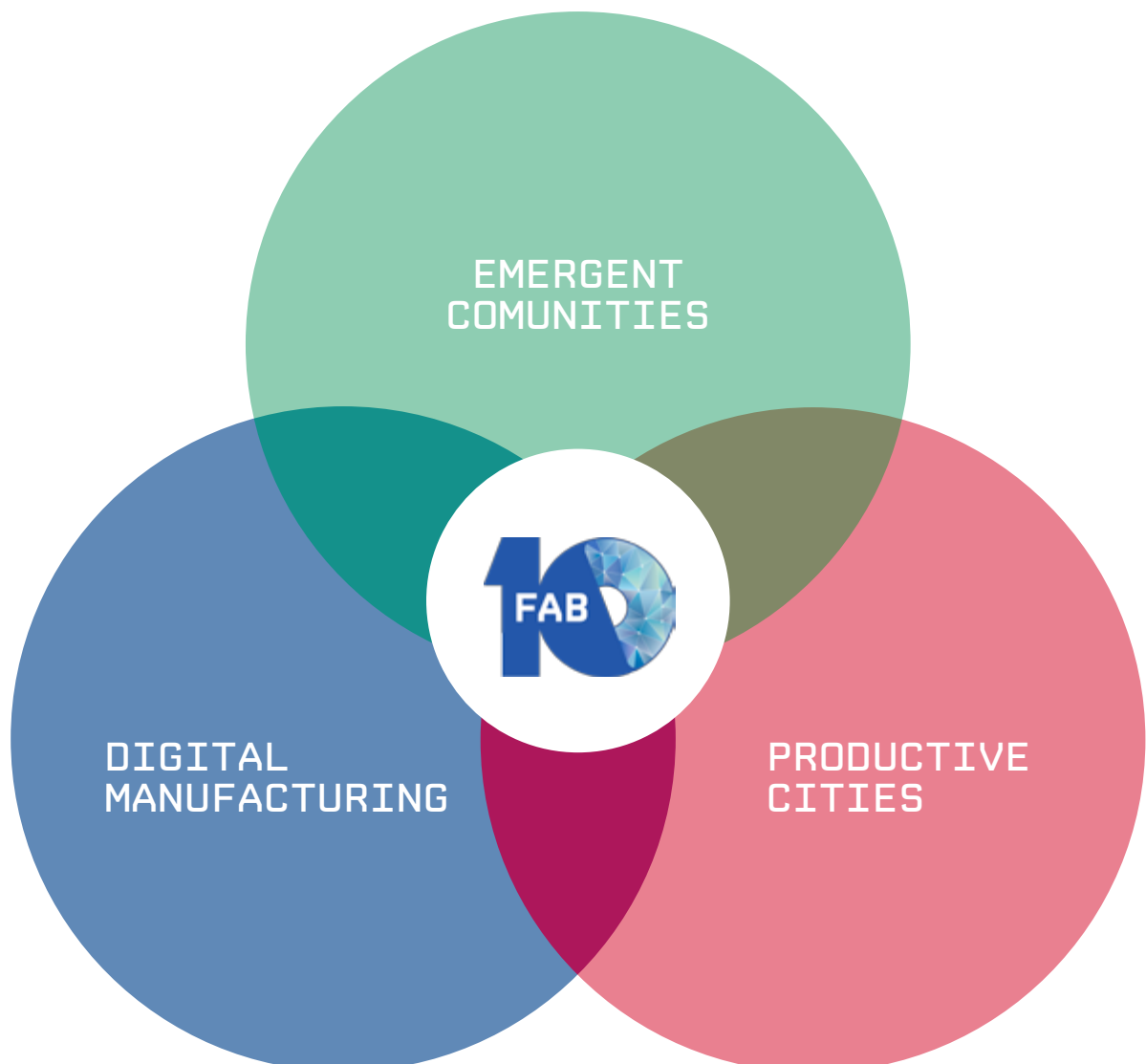


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FAB CITY

FAB10 in Barcelona is going to focus on the subject From Fab Labs to Fab Cities, thus initiating the worldwide project for productive cities, cities that have used sustainability to reindustrialise themselves.

The activities of this event will be based on three main issues: Emerging Communities, Digital Manufacturing and Productive Cities. The specialists will discuss what a city with Fab Labs in every district, where people can produce anything they want, could be like. Will the city of the future be self-sufficient? Will it reuse materials? Will buildings be capable of managing their own energy? All these issues will be discussed during FAB10.





A change of paradigm, a change of values

Did you know that you can share the code for making a chair with your neighbour?

TAGS: industry, training, commerce, education

Within the context of sharing knowledge and information, in the near future we will be able to share the code for making any object: a chair, plates, clothes...

With just a couple of clicks on the Internet, the necessary information and technology for carrying out a total digital revolution already exist. We can find all kinds of manuals, open source codes, scientific documentation and specific plans of practically anything at our disposal. However, it is not a case of copying, but assimilating all this information and transforming it into specific knowledge and practical solutions for improving our daily lives.

Going from Fab Labs to Fab Cities entails turning citizens who consume – objects they have not yet decided what they want them to be like – into citizens who can produce exactly what they need, thus

creating more intelligent, sustainable and competitive environments.

Fab Cities and Fab Labs will be spaces that teach citizens how to produce locally. If we add the decentralised and cooperative network of the international Fab Labs, there is no limit to shared knowledge. Fab Labs will continue to be spaces for educating, reactivating sustainable economy and stimulating an active social role.

Not everyone needs to be a programmer; we cannot all be designers, artists or poets, and it is even less likely that each one of us is capable of doing everything. However, if we use the Internet to join the strengths and knowledge of different people and we use constructive digital tools, we will be creating shared knowledge which will make everything possible.





A change of paradigm: from a Fab Lab to a Fab City

We are inventing a creative, sustainable and local future

TAGS: crisis, ecology, economy

For Neil Gershenfeld, director of the MIT's Center for Bits and Atoms del MIT (Massachusetts Institute of Technology), Fab Labs are an answer to the crisis, since they encourage us to reassess the economic bases that have led us to the situation we live today.

If the current market is based on inventing a product and producing it in the cheapest place to then pay the cost of shipping, the Fab Lab philosophy is just the opposite: produce to order, regardless of where the product has been designed and with the necessary modifications for adapting it to each need. International design, local fabrication.

Besides stimulating creativity, we reduce the ecological footprint, since we save on overproduction, fuel used for distribution, packaging, storage, etc. At the moment, our cities receive tonnes of goods every day, of which a significant part turns into waste. It is calculated that we only recycle a quarter of the waste we produce. FAB's proposal is to reduce the volume of rejected matter and convert the rest into building materials to be used by the Fab Labs themselves, establishing what is known as a circular economy. A self-sufficient and sustainable city is a real possibility.

This applied knowledge will also make it possible to create new innovating companies with international connections, using cutting-edge technology at a low cost. At the same time, new labour activities will appear that are in tune with the era of the Internet and the economy of the 21st century, as well as vocations that are still unknown to us.

In conclusion, Fab Labs are a possible, reassuring and participatory answer to current times.

Large-scale digital manufacturing will create the Fab City: a proposal for a self-sufficient city. As though it were a living organism, the city will receive less goods and raw materials and, thanks to circular economy, far less matter will be thrown away.

A Fab City will entail a change in the economic model: we will be able to go to Fab Lab to produce different items, we will have a 3D printer at home and buildings will self-manage their energy. Something that seems so far off yet has already started to emerge in cities such as Barcelona where there are different Manufacturing Athenaeums and buildings that are self-sufficient in energy production.

A Fab City will produce more items locally (becoming craftsmen once again) and we will make use of resources. We will be able to recycle a glass we have printed and convert it into another necessary item. This change of paradigm entails bringing industrialisation back to cities: we will be able to live and produce in the same neighbourhood.

A change of paradigm: proximity

Do you know you will be able to make furniture in your local Fab Lab?

TAGS: access, democratisation, knowledge

FAB10's objective is to promote working with the Fab Lab network, a task that consists in making personal manufacture and collective knowledge accessible. In the same way personal computers transfer reality to the digital world (transmitting handwriting and physical objects to the screen) today we can make the journey in the opposite direction: going from bits to atoms, from virtual design to the physical object.

As a result, people from all over the world are greatly interested in following the Manufacturing Athenaeums' pioneering project, which Barcelona City Hall is promoting.

The aim is provide the people in each neighbourhood with a freely accessible production point, a space where citizens and technology can work together and to ensure the direct impact is noticed in the corresponding neighbourhood.



Who organises FAB10?

The Institute for Advanced Architecture of Catalonia

TAGS: laaC, Center for Bits and Atoms, Fab Foundation, SmartCity

FAB10 is organised by the Institute of Advanced Architecture of Catalonia (laaC). Hábitat Urbano from Barcelona City Council is also involved and the Center for Bits and Atoms, of the Massachusetts Institute of Technology (MIT) and the Fab Foundation, both in Boston, have worked in close collaboration

The IaaC is a state-of-the-art educational and research centre dedicated to developing architecture that responds to the challenges of the 21st century. Teachers and students from over 35 countries work in different areas of knowledge and at multiple scales, from major cities to small-scale manufacturing, to successfully obtain an integrated and effective set of competences.

Included among other training courses the laaC, in collaboration with the Polytechnic University (UPC), organises the Master's in Advanced Architecture and the Master's in Advanced Interaction, aimed towards programmers and designers.

The IaaC was the driving force behind Fab Lab Barcelona, the first Fab Lab in the European Union, presented in public during FAB3, which was held in

2006, in Pretoria, South Africa. Nowadays the laaC is the institution in the south of Europe with the most advanced digital manufacturing laboratory, with laser cutters, 3D printers, milling machines and a platform for manufacturing electronic products. This Fab Lab is where the course programme offered by the Fab Academy is carried out.

Barcelona City Hall's participation in FAB10 is included within the strategy to encourage innovation and new technologies, such as European Capital of Innovation, Mobile World Capital and the venue of the SmartCity Expo World Congress. The City Hall's vision for the future is a city arranged into productive neighbourhoods, which move at a human rate and are connected with the world, sharing FAB10's will to join the citizens and territories.

FAB10 is also sponsored by Epilog, GCC, Global Vacuum Presses, Intel, Moritz, Perez Camp, Roland, Trotec, US AID, World Bank, HP, Roland, La Vanguardia, Moritz, Epilog, Trotec, US AID, The World Bank, BAF, Perez Camps, GCC and Global.





BACKGROUND

The FAB10 held in Barcelona celebrates 10 years of sharing experiences and the evolution of the project. Ever since the first meeting of digital manufacturing experts was held in 2004, in Boston, until FAB10 today, these meetings have been travelling around the world spreading ideas and receiving support.

FAB1 Boston, USA.

The first meeting in the Center for Bits and Atoms (CBA) of the Massachusetts Institute of Technology (MIT), where the idea of holding annual meetings was put forward.

FAB2 Lyngen, Noruega.

The first implementation of a Fab Lab outside Boston.

FAB3 Pretòria, República de Sudàfrica.

Promoted the creation of the Fab Lab network and supported innovation for development.

FAB4 Chicago, USA.

It analysed the growth of Fab Labs in urban environments in the USA.

FAB5 Pune, India.

The Fab Academy (digital training programme) was presented in Vigyan Ashram, one of the spiritual leaders of the FAB conferences.

FAB6 Amsterdam, Kingdom of the Netherlands.

The first graduation from the Fab Academy was held at a time when Holland had the highest number of Fab Labs per km2.

FAB7 Lima, Perú.

It marked the entry of Latin America into the Fab Lab network. Thanks to collaboration between the Institute of Advanced Architecture of Catalonia (laaC) and the Spanish Agency for International Cooperation and Development (AECID) the first Fab Lab was set up in the region.

FAB8 Wellington, New Zealand.

For the first time the network extended to Oceania.

FAB9 Yokohama, Japan.

For the first time and to demonstrate the interest it generated, the general public was invited to attend one of the days of the symposium.





**10th FAB LAB INTERNATIONAL
CONFERENCE AND ANUAL MEETING**

From 2 to 8 July 2014
www.fab10.org

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MOST RELEVANT SPEAKERS

<https://www.fab10.org/en/symposium>



Neil Gershenfeld, USA

Director of the MIT's Center for Bits and Atoms.

Doctor in Applied Physics from Cornell University and member of the research team in Bell Laboratories. He is a member of the American Physical Society. His goal is to break down boundaries between the digital and physical worlds, from creating molecular quantum computers to virtuoso musical instruments.

His laboratory has produced technology which is used in places such as the New York MOMA, rural areas in India, the White House and the World Economic Forum, urban community centres and car safety systems, shows in Las Vegas and the herds of the Sami people. He is the author of numerous technical publications, patents and books, such as *Fab*, *When Things Start To Think* or *The Nature of Mathematical Modeling*.

<http://ng.cba.mit.edu/>

Tags: Father of Fab Lab.



Massimo Banzi, Italy

Co-founder of the Arduino platform.

In addition to working as a professor in the Copenhagen Institute of Interaction Design, as co-founder of the Arduino platform he put the concept of Open Hardware within reach of everybody. Apart from working for a long time as a software architect and interaction designer, especially in Milan and London, he has been a teacher in many institutions, such as the Architectural Association (London), Hochschule für Gestaltung und Kunst (Basel), Medialab (Madrid), Escuela Superior de Diseño (Barcelona), ARS Electronica (Linz), Mediamatic y Doors of Perception (Amsterdam).

<http://www.massimobanzi.com/>

Tags: Co-founder of Arduino.



Jeremy Rifkin, USA

He graduated in Economics by the Wharton School of the Pennsylvania University and in International Affairs by the Fletcher's Law & Diplomacy School of the Tufts University. He is a researcher in the impact of scientific and technological changes in economy, society and environment.

He is considered the main architect of the EU plan for the third industrial revolution, approved in 2007. A plan meant to face the triple challenge of the world economic crisis, the energy security and the climate change.

Jeremy Rifkin has been a counselor of the EU for the past 10 years along with prime ministers such as Nicolas Sarkozy (France), Angela Merkel (Germany), José Sócrates (Portugal), José Luís Rodríguez Zapatero (Spain) and Janez Jansa (Slovenia) during their presidencies at the European Council. Currently he is a counselor of the European Commission, European Parliament and various countries in Europe and Asia. He is a professor of the Executive Education Program of the Wharton School at the Pennsylvania University.

Prolific writer, he has published in specialized magazines and newspapers throughout the world. On April 1st, 2014 Mr. Rifkin published his latest book, The Zero Marginal Cost Society: The Internet of Things, the Collaborative Commons, and the Eclipse of Capitalism. In 2011, he published the New York Times best-seller The Third Industrial Revolution.

www.foet.org/JeremyRifkin.htm



Ellen MacArthur, UK

Ellen MacArthur Foundation

A yachtswoman. In 2005 she broke the world record for solo circumnavigation of the globe, completing the feat in only 71 days. In 2009 she retired from competitions and founded the Ellen MacArthur Foundation, focused on accelerating the transition to regenerative circular economy.

<http://www.ellenmacarthurfoundation.org/>



Paul Eremenko, EUA

Aerospace design engineer, licenced pilot and holder of a law degree. Director of Project Ara, within the Advanced Technology and Projects organisation, at Google and affiliate at MIT in the Engineering Systems Division.

When he was associate vice-president at Motorola, he commenced Project Ara with the aim of creating a modular hardware ecosystem for smartphones.

He had previously directed the Tactical Technology Office at the Defense Advanced Research Projects Agency of the USA, the Pentagon's principal engine for disruptive innovation. He also worked as the director of several space programmes, including the 100 Year Starship.

<https://www.linkedin.com/in/pauleremenko>

Tags: Project Ara, Google.



Vicente Gualart, Spain

Head architect of the city of Barcelona since 2011. Co-founder and director of the Institute of Advanced Architecture of Catalonia (laaC) from 2003 to 2011.

He is working in the confluence between architecture, nature and technology. Some of his projects are the Muntanya Dénia (reconstruction of a quarry that supports an ancient Arab castle, selected for the 2004 edition of the International Architecture Exhibition of Venice), three ports in the north of Taiwan (winners of two international competitions), or the Sharing Tower in the neighbourhood of La Torre (Valencia). In 2000 he co-directed the Media House project, the prototype of a house based for the first time on distributed programming.

The Korean publishing company, DD, dedicated the monograph "Intelligent Realities" to his work and editorial.

Gualart is preparing his new book "Mitjans, Muntanyes i Arquitectura".

<http://www.gualart.com/>

Tags: Self-sufficient city, Fab Lab Barcelona 2007.



Hannah Jones, UK / USA

A specialist in social action, she commenced her career working as a journalist for the BBC to then become a consultant in community issue programmes for Microsoft and Kimberly-Clark. She now takes charge of managing Nike's international corporate efforts as regards responsible competition, community investments, social and product innovation. Her goal is to insert social and environmental innovation into the business model, giving rise to further business innovations, growth and social change.

She is a founding member of the Business Advisors Council of the Office of the United Nations High Commissioner for Refugees (UNHCR) and, in 2007, she was appointed Young Global Leader in collaboration with the World Economic Forum.

<http://nikeinc.com/hannah-jones>

Tags: Nike CSR (Corporate Social Responsibility).



Achim Menges, Germany

Architect, director and founder of the Institute for Computational Design, Universidad de Stuttgart. He is also visiting professor in Architecture at Harvard University's Graduate School of Design and visiting professor of the Emergent Technologies and Design Graduate Program at the Architectural Association, London. His practice and research focuses on the development of integral design processes at the intersection of morphogenetic design computation, biomimetic engineering and computer aided manufacturing that enables a highly articulated, performative environment. His work is also based on an interdisciplinary approach, which leads to collaborating with engineers, computer scientists, material scientists and biologists. Some of his pieces form part of the permanent collection of the Centre Pompidou in Paris.

<http://www.achimmenges.net/>

Tags: Intersection between morphogenetic design computation, biometric engineering and digital production.

And also:

Patrick Yizhi Cai. University of Edinburgh. *Synthetic Yeast*

TBA. Urban Agriculture. NASA. ESA. *Norman Foster/Moon*

Vincent Loubière. Airbus. *Makers and Manufacturing*

Jeremy Rifkin (video). Foundation on Economic Trends. *The Zero Marginal Cost Society*

Bill McDonough (video) McDonough + Partners. *Cradle to Cradle Housing*

Bruce Sterling. Art Center College of Design. *Smart City-States*

Bert Crenca. AS220. *The Power of Art*

Nadeem Mazeen. City of Cambridge. *Innovation Ecosystems*

TBA. Resolving Conflict. *Mayors rule the world*

Xavier Trias. Mayor of Barcelona

Xavier De Kestelier. Foster + Partners.

Bert Crenca. Visual Artist.



GLOSSARY

RELATED TO FAB

Fab Lab

A digital manufacturing workshop equipped with cutting-edge technology and connected to a network for exchanging and methodologies, with an open-minded and collaborative philosophy. A Fab Lab is a space for education, research and production where it is possible to produce all kinds of physical objects at a personal scale by means of machinery such as 3D printers, milling machines or laser cutters, controlled by computer.

The idea of Fab Labs was born at the beginning of 2000 in the Center for Bits and Atoms (CBA) of the Massachusetts Institute of Technology (MIT) and the first labs appeared in African-American communities in Boston, in India and Norway, in each case to respond to the needs of their environments. At present there are over 330 laboratories in 50 countries from all over the world.

Fab City

A concept that was introduced by Fab Lab Barcelona - IaaC, which refers to a city organised in a network of Fab Labs and destined to the productive self-sufficiency of its inhabitants, minimising waste and activating its creative potential within a global range. The Fab City project aims to recover local production by means of supporting social innovation and the development of new technological industries, whilst considering the recovery of knowledge associated to digital manufacturing and local fabrication.

RELATED TO FAB CULTURE

DIY

The initials of Do It Yourself: an international movement which has recently encouraged people from everywhere to recover traditional procedures and techniques to be able to provide themselves with their own clothes, food or whatever they need.

DIWO

The initials of Do It With Others: a derivation of DIY with the emphasis on the community and the exchange of knowledge.

Maker

A person who, within the DIY trend, turns to technology to improve or take their creativity and productive needs to new horizons.

Glocal

A term that comes from joining the words global and local and which translate into the concept of “think globally, act locally”.

Smart city

This defines a city that invests in human and social capital, as well as investing in both traditional communication structures (transport) and modern ones (IT technologies), with the aim of achieving sustainable economic development and quality of life, respecting the environment and encouraging its citizens to become involved.



RELATED TO FAB TOOLS AND PRODUCTS

Arduino

An open-source hardware platform which is flexible and easy to use. It was initially created for artists, designers and, finally, anyone who was interested in creating objects or interactive environments.

Manufacturing Athenaeums Digital municipalities

Facilities open to citizens where they can interact with specialised communities and technology, where the new technological tools are brought to everybody, thus promoting the generation of ideas and projects of a global nature or created to be applied directly in the neighbourhood.

Barcelona is the first city in the world that is creating and promoting a network of municipal Digital Manufacturing Athenaeums – at the moment there are two underway, in Les Corts and in Ciutat Meridiana – which form part of the Fab Lab international network.

CNC

The initials of “numerical control” or “computer numerical control”: a system for automating machines. The first CNC machines were built in the 1940s and 1950s, but due to the decrease in the price of microprocessors and the fact programming has become simpler, the use of these machines has become generalised.

Digital manufacturing

A process that directly joins design to production by means of software, 3D moulding tools and subtractive and additive manufacturing processes. The result can be applied in different fields, in different materials and for different scales. In the building sector, milling machines directed by computer programmes are used.