



D8.12 POLICY FACTSHEETS, FOURTH VERSION

Project Acronym	DiDIY
Project Name	Digital Do It Yourself
Grant Agreement no.	644344
Start date of the project	01/01/2015
End date of the project	30/06/2017
Work Package producing the document	WP8 – Dissemination, future roadmap and sustainability
WP Lead Partner	FKI
Other Partner(s) involved	all
Deliverable identifier	D8.12
Deliverable lead beneficiary	FKI
Due date	M30 (June 2017)
Date of delivery	30/06/2017
Version	1.0
Author(s)	all partners
License	Creative Commons Attribution ShareAlike 4.0
Classification	PUBLIC
Document Status	APPROVED
<i>This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 644344.</i>	
<i>Disclaimer: The views expressed in this document do not necessarily reflect the views of the EC.</i>	



Disclaimer

This document is provided “As Is”; it is a study introducing the main research topics in the presented context. Any feedback, suggestions and contributions to make this document better and more useful are very welcome. Please let us know through the contact page www.didiy.eu/contact. We will seek to incorporate relevant contributions in the document and add your name to the list of contributors.

Executive summary

Deliverable D8.12, “Policy Factsheets, fourth version”, includes the final releases of the fact sheets initially released in December 2015, as documented in D8.6, aimed at being concise and clearly written, prepared on research findings as they arise, giving information for policy advisors, about the impact of DiDIY in the main topics of the Project, i.e., reshaping the organization and work forms, reshaping education and research, modelling new creative culture and processes, and modifying the current concept of DiDIY-related rights and responsibilities, particularly in relation to Intellectual Property Rights.

Revision history			
Version	Date	Created / modified by	Comments
0.1	06/06/17	FKI	First draft, collecting revisions from all partners.
0.2	26/06/17	POLIMI	Layout revisions.
0.3	28/06/17	FKI/LIUC	Further revisions.
1.0	30/06/17	LIUC	Approved version, submitted to the EC Participant Portal.



Table of Contents

Disclaimer.....	2
Executive summary.....	2
1. Scope and objectives.....	4
Annex 1: Fact sheet – Introduction to Digital DIY.....	6
Annex 2: Fact sheet – Impact of DiDIY on Organization and Work.....	10
Annex 3: Fact sheet – Impact of DiDIY on Education and Research.....	14
Annex 4: Fact sheet – Impact of DiDIY on Creative Society.....	18
Annex 5: Fact sheet – Impact of DiDIY on Rights, Responsibilities and Intellectual Property.....	22



1. Scope and objectives

The fact sheets included in this Deliverable are aimed at presenting the main facts on DiDIY as identified in the research activities of the Project. They are believed to be useful to all who are interested in better understanding the complex phenomenon that is DiDIY, and to policy advisors and decision makers in particular.

Hence each fact sheet has been designed so to be easily and effectively readable by everyone, and is e-published through the Project website so to reach the widest number of readers possible.

As planned, the first version of five fact sheets was published on December 2015:

- Introduction to Digital DIY
- Impact of DiDIY on Organization and Work
- Impact of DiDIY on Education and Research
- Impact of DiDIY on Creative Society
- Impact of DiDIY on Rights, Responsibilities and Intellectual Property

as documented in D8.6.

Since the publication of the first version of these fact sheets:

- they have been reformatted to make them visually more readable and attractive;
- their texts have been carefully revised;
- a page in the Project website (<http://www.didiy.eu/project/fact-sheets>) has been created to make them easily accessible,

and, of course, the fact sheets have been widely exploited to disseminate the information on Digital DIY and our Project.

After delivery of their second version in June 2016, and throughout the second half of the year, the DiDIY research team has revised again the content of all fact sheets, to check if any of them required additions or updates. The conclusion has been that no updates of the content were needed in that moment, because:

- the fact sheet format does not allow texts that are longer, or more complex, than those of the second version released in June 2016;
- the contents of those fact sheets still provide an adequate description of the main sides of the Digital DIY phenomenon, as well as the corresponding research and dissemination activity performed by the DiDIY Project.

In the last six months of the DiDIY Project, the fact sheets were compared again with the outcomes of the workshops and other research activities made in all Work Packages. Eventually, all the fact sheets have been updated, for two reasons.

The first one was to make the common text of all fact sheets, especially the final part, match the fact that the Project ended in June 2017. The new final text lists the most important results published in 2017 including, but not limited to, the policy guidelines (D7.2, D7.3, D7.4), the guidance e-manual (D8.14), and the DiDIY Manifesto (D5.2). In the interest of long term sustainability of the DiDIY Project results, the text also makes clear that:



“All partners of the DiDIY Consortium continue to work in this field, and are interested in cooperating with other organisations, from joint research to training and evangelisation activities on DiDIY and related topics.”

and invites the readers to contact the partners of the Consortium.

In addition to this common, necessary change, all fact sheets have received updates that in most cases are small in size, but not negligible in meaning. In all fact sheets, the “titles” or descriptions of many facts have been modified to clearly explain that they are not any more the result of preliminary, incomplete research, but have been confirmed throughout the whole Project. Besides this common need, the final fact sheet about Education and Research describes the fact, added in this edition, that “National and European institutions can play a key role to overcome the hurdles in the uses of DiDIY for learning purposes”.

The following Annexes includes the fourth, final, versions of the fact sheets.



Annex 1: Fact sheet – Introduction to Digital DIY

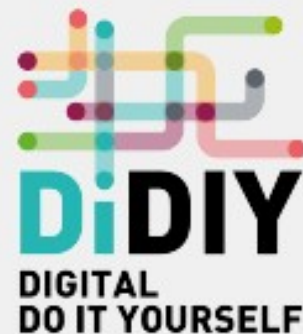


Introduction to Digital DIY

This fact sheet provides the bases to discover DiDIY and its impacts on European society. It is part of a series of fact sheets produced by the European research Project DiDIY, aimed at providing inputs to find together answers to questions such as:

Is Europe really ready for DiDIY? Does Europe really want DiDIY? Does Europe really need DiDIY?

www.didiy.eu



Digital Do-It-Yourself ("DiDIY" for short) is a complex phenomenon, involving social, cultural, technological, economic, and psychological dimensions, stemming from the new ability to **mix physical and informational components** into simple and affordable systems such as 3D printers and Arduino boards.

We call it "Atoms-Bits Convergence", to emphasise that what is happening could become a **new alphabet of knowledge**, hence a new ABC, that may ground and reshape our society thanks to the widespread availability of digital tools that are much cheaper and easier to use than they were just a few years ago, and to the increasing familiarity of many people with such tools. The emergence of the Internet of Things, as the world-wide inclusive ABC system, is further amplifying the potentialities of DiDIY.

But **where these changes are going to lead us is still to be determined**, and is at least partly dependent on the choices that the relevant actors (governments, industries, public administrations, schools and universities,...) are making and will make in the immediate future.

Photograph by Maciej Wojnicki, used under a Creative Commons BY 2.0 licence



FACT

DiDIY is already everywhere

Computers, digital communication networks and production systems controlled by digital devices have been used for decades. The novelty of DiDIY is that these systems, or at least scaled down versions of them, **are widespread and used in every field of human activity nowadays**, even outside of the workplace, that is in personal or otherwise non-professional settings. Today many different things are produced in the spirit of DiDIY, from toys to medical devices and homes, weapons, clothes, furniture, agricultural machinery, jewellery, and environmental monitoring systems. Most designs, be they **developed by teams or by single individuals, are published with open licenses**, in on-line communities like Thingiverse (www.thingiverse.com), Arduino forums (forum.arduino.cc), Instructables (www.instructables.com), or OpenDesk (www.opendesk.cc). You can find many real-world examples of DiDIY in action in the DiDIY Project blog (www.didiy.eu/blogs).

FACT

DiDIY is a complex phenomenon

DiDIY is both **something that someone:**

- **does, an activity** for the production, modification or maintenance of objects or services; in this sense DiDIY is objective, and manifests itself as tools, products, structure of collaborations, etc;
- **has, a mindset**, and then a producing and consuming culture; in this sense DiDIY is subjective, and manifests itself as motivations, competences, social contexts, etc.

We have found, and documented, that this combination activates a self-reinforcing process that is **transforming DiDIY into a powerful socio-technical system**. Consequently, its evolution and regulation should be driven mainly by social and cultural strategies, not by technology.

FACT

DiDIY requires to rethink product liability

Product liability is a consequence of the so called "duty of care", which is a legal obligation to adhere to a standard of reasonable care when manufacturing and selling products. The advent of DiDIY, however, problematises this issue, by enabling many more individuals to make products that might prove unsafe. The DiDIY practice of making artefacts oneself - as hobbyist, amateur or inhouse - **does not necessarily follow the same standards or certifications**, and tends to be for personal use, not for sale. We have found that this fact ultimately has consequences for the social contract and the way we think about product responsibility and risks.



**FACT**

DiDIY forces society to rethink what is wrong or right

With DiDIY people can easily produce physical objects of all sorts, and this may be for the wrong or for the right:

- self production of objects that may directly hurt people, be they weapons or, much more likely, unsafe furniture or car parts, **presents objective risks**, that must be thoroughly evaluated;
- widespread DiDIY manufacturing **may bring huge benefits to society**, from reduced waste and pollution (DiDIY spare parts!) to support for new art forms, or more effective teaching methods.

Our research has shown that both scenarios will certainly require the adaptation of existing laws, or in some cases the creation of new ones, in order for the whole society to benefit as much as possible from DiDIY, while minimising the associated risks

FACT

DiDIY changes the ways we deal with physical objects

DiDIY offers possibilities of personal fabrication and repair/maintenance that are blurring the distinction between producers and consumers. We have found that this will not just create new options for making all of us prosumers, but above all challenge the very definition of what a product is at all levels, from legal to marketing.

FACT

DiDIY reshapes arts, schools, and workplaces

All our research has confirmed one basic fact: DiDIY **will contribute to change**, in ways not fully studied or understood yet, the ways in which Europeans study, work, express their creativity and, in general, deal with the physical and non-physical goods in the knowledge society. These impacts are described in other DiDIY fact sheets, available in the "Results" section of the DiDIY website (www.didiy.eu/project/results).

To know more about Digital Do It Yourself...

The DiDIY project has ended in June 2017. All its results, however, are still available on the DiDIY website, in order to help everybody to understand what DiDIY is, the impacts it will have on the European society, and what to do about it. These results include, but are not limited to:

- More specific fact sheets on the impacts of DiDIY in work, creativity, intellectual property, etc;
- Foundational interpretation of DiDIY;
- A Knowledge Framework and a Vocabulary on DiDIY;
- A DiDIY Manifesto for Positive Social Change;
- A DiDIY Guidance Manual, and several DiDIY Policy Guidelines

All partners of the DiDIY Consortium continue to work in this field, and are interested in cooperating with other organisations, from joint research to training and evangelisation activities on DiDIY and related topics.

To contact them, please visit www.didiy.eu



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 644344.
The views expressed in this document do not necessarily reflect the views of the EC

The contents of this document are licensed under a Creative Commons Attribution-ShareAlike 4.0.
Version 2.0 released on 30 Jun 2017





Annex 2: Fact sheet – Impact of DiDIY on Organization and Work



This fact sheet provides the bases to discover DiDIY and its impacts on European society. It is part of a series of fact sheets produced by the European research Project DiDIY, aimed at providing inputs to find together answers to questions such as:

Is Europe really ready for DiDIY? Does Europe really want DiDIY? Does Europe really need DiDIY?

www.didiy.eu



Digital Do-It-Yourself ("DiDIY" for short) is a complex phenomenon, involving social, cultural, technological, economic, and psychological dimensions, stemming from the new ability to **mix physical and informational components** into simple and affordable systems such as 3D printers and Arduino boards.

We call it "Atoms-Bits Convergence", to emphasise that what is happening could become a **new alphabet of knowledge**, hence a new ABC, that may ground and reshape our society thanks to the widespread availability of digital tools that are much cheaper and easier to use than they were just a few years ago, and to the increasing familiarity of many people with such tools. The emergence of the Internet of Things, as the world-wide inclusive ABC system, is further amplifying the potentialities of DiDIY.

But **where these changes are going to lead us is still to be determined**, and is at least partly dependent on the choices that the relevant actors (governments, industries, public administrations, schools and universities,...) are making and will make in the immediate future.

**FACT**

The “Yourself” in DiDIY can also be a company, not just an individual

The “Yourself” in DiDIY is originally meant to be an individual, but the widespread availability of networked digital information processors, the interest or the need to share knowledge and the current state of markets, in which adaptability and rapid innovation are keys for survival of any company, **have created new dimensions of DiDIY** and new reasons for companies to adopt, or let their employees adopt, DiDIY practices. In these dimensions, the “Yourself” can be a group, a class, a community of practice, a company, or an industrial cluster, and in perspective the whole society as such. Hence the digital tools are transforming the Do-It-Yourself into a Do-It-Together.

FACT

DiDIY makes it possible for professionals and companies to build their own tools

DiDIY can be used to build not only some products, but also the tools with which one may then build other products. For example, a cabinet maker may build by herself, with DiDIY techniques, the CNC router or lathe that she will then use in her professional activity. In similar fashion, a pottery maker or an orthodontist may 3D print the casts and tools they would then use in their job. In other words, the ability to produce an increasing diversity of objects means that DiDIY is not restricted to hobbies and non-professional activities. Thanks to DiDIY, single artisans, farmers, artists, fashion designers and, in general, small/medium enterprises in all sectors of the economy **have the possibility to build their own custom tools in-house**, with a much greater control on their capabilities than in the past, and often at much smaller costs.

FACT

DiDIY leads makers and enterprises to create new cluster-based business models

Leveraging on the Do-It-Together mindset, DiDIY **leads to new forms of aggregations**. At the individual level makers evolve from sharing knowledge into cooperating into organizations with different business models. At the enterprise level, the availability of knowledge sharing digital platforms enables companies to give life to collaborative practices that can evolve in structured finalized joined activities (research and development, internationalization, etc), which can then further develop into formalized clusters of enterprises.



**FACT**

DiDIY shakes organisational roles by enabling disintermediation of experts

By exploiting the availability and ease of use of DiDIY, organisational roles typically dependent on experts (internal or external to the organisation) **can carry out, autonomously, innovative practices.** With Arduino boards and sensors, workmen in the production plants can set up a pilot project to monitor the production flow without or limitedly asking support to the IT department; with 3D printers R&D employees can create prototypes of new products without requiring support from R&D consulting firms; marketing employees can set up a marketing campaign by creating a mobile app, without or limitedly asking support to the IT department.

FACT

DiDIY turns supply chains upside down by making it possible to produce spare parts locally

The rise of DiDIY may have a radical impact on supply chains: it will allow businesses to manufacture and customize spare parts locally that they previously would have had to ship from distant locations, thereby allowing them to cut down transportation costs and to respond faster to consumer demand. This **will carry benefits for consumers but also for the environment,** for example because of reduced harmful emissions due to transport of goods. However, it can also be a source of concern if jobs get lost in the process, and the re-training of workers is no straightforward matter, and if manufacturing gets shifted away from low-wage countries, with potentially damaging consequences for their economies.

To know more about Digital Do It Yourself...

The DiDIY project has ended in June 2017. All its results, however, are still available on the DiDIY website, in order to help everybody to understand what DiDIY is, the impacts it will have on the European society, and what to do about it. These results include, but are not limited to:

- More specific fact sheets on the impacts of DiDIY in work, creativity, intellectual property, etc;
- Foundational interpretation of DiDIY;
- A Knowledge Framework and a Vocabulary on DiDIY;
- A DiDIY Manifesto for Positive Social Change;
- A DiDIY Guidance Manual, and several DiDIY Policy Guidelines

All partners of the DiDIY Consortium continue to work in this field, and are interested in cooperating with other organisations, from joint research to training and evangelisation activities on DiDIY and related topics.

To contact them, please visit www.didiy.eu



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 644344.
The views expressed in this document do not necessarily reflect the views of the EC

The contents of this document are licensed under a Creative Commons Attribution-ShareAlike 4.0.
Version 2.0 released on 30 Jun 2017





Annex 3: Fact sheet – Impact of DiDIY on Education and Research



Impact of DiDIY on Education and Research

This fact sheet provides the bases to discover DiDIY and its impacts on European society. It is part of a series of fact sheets produced by the European research Project DiDIY, aimed at providing inputs to find together answers to questions such as:

Is Europe really ready for DiDIY? Does Europe really want DiDIY? Does Europe really need DiDIY?

www.didiy.eu



Digital Do-It-Yourself ("DiDIY" for short) is a complex phenomenon, involving social, cultural, technological, economic, and psychological dimensions, stemming from the new ability to **mix physical and informational components** into simple and affordable systems such as 3D printers and Arduino boards.

We call it "Atoms-Bits Convergence", to emphasise that what is happening could become a **new alphabet of knowledge**, hence a new ABC, that may ground and reshape our society thanks to the widespread availability of digital tools that are much cheaper and easier to use than they were just a few years ago, and to the increasing familiarity of many people with such tools. The emergence of the Internet of Things, as the world-wide inclusive ABC system, is further amplifying the potentialities of DiDIY.

But **where these changes are going to lead us is still to be determined**, and is at least partly dependent on the choices that the relevant actors (governments, industries, public administrations, schools and universities,...) are making and will make in the immediate future.

Photograph by Bre Pettis, used under a Creative Commons BY-NC licence

**FACT**

DiDIY builds on shared knowledge, for the benefit of learning and research

It is part of human nature to share knowledge. Digital networks have significantly reduced the cost associated with it, paving the way to the collective production of new knowledge. A large part of such information **is licensed under equal conditions as open access or free knowledge** on online communities such as Thingiverse (www.thingiverse.com), Arduino forums (forum.arduino.cc), OpenDesk (www.opendesk.cc), and Instructables (www.instructables.com). The DiDIY Project blog (www.didiy.eu/blogs) and Resources area (www.didiy.eu/resources) showcase a series of significant real-word examples of DiDIY in education and research, as well as in other fields..

FACT

DiDIY facilitates the production of prototypes and other artefacts to be used in educational contexts

3D printers and other devices for digital fabrication **make it much easier for students of design and engineering to produce prototypes**. However, applications in other school and research subjects are possible. Students of history can build detailed 3D models of historical artefacts, while students of medical or biological sciences can create plastic models of human organs or life forms. To maximise the benefits of DiDIY in education, coordination among all stakeholders (museums and schools, teachers and school managers, etc.) is needed, as well as more support for teachers (ad-hoc training and documentation on DiDIY technology, information on how to minimise costs and waste of material in DiDIY manufacturing, etc).

FACT

DiDIY is already reshaping education

In Europe and elsewhere, DiDIY **is currently being incorporated in schools** and it is already exploited for extracurricular activities such as coder dojos, robotics contests, cooperation with existing fab labs or maker spaces, etc. Schools are now progressively moving from a content-delivering role to a more broad approach, including the acquisition of transversal skills such as a flexible attitude to cooperation, communication and entrepreneurship. For its very nature, **DiDIY can support and enhance the acquisition of the so called "21st century skills"**, which comprise creativity and innovation, critical thinking, problem solving, decision making, and an open attitude to life-long learning. While the level of change required in schools is significant, it is best supported in the short to medium term by changing the emphasis of existing curricula and assessment, encouraging schools to use multiple types of assessment





FACT

DiDIY can best affect education when teachers feel comfortable with new technologies

New technologies possess the potentialities to drive **new approaches of innovative learning centered around the person and closer to the need of the territory**. The DiDIY-related educational activities can potentially make the school laboratory work meaningful to the student, enhancing the learning experience and helping reinforce motivation. Creating such new learning environments requires a systems approach which must include building teacher capacity. Innovating education is not possible without innovating teaching schemes. Of crucial importance is the ability of national systems to build a **skilled and dedicated teacher workforce**, attracting and retaining qualified teachers and ensuring that they continue to learn throughout their careers.

FACT

National and European institutions can play a key role to overcome the hurdles in the uses of DiDIY for learning purposes

All European countries are facing similar problems related to employability of young and senior citizens. We believe that the European Commission together with all European national systems should continue to **drive investment in education**. Giving young students the opportunity to better learn science also by means of DiDIY-related activities in school will lead to a **better informed future citizens**, able to exploit the potentialities of research results, understanding its limitation and ethical implications. A cultural shift is needed to recognize DiDIY and new technologies as an opportunity to improve the [digital] culture of the society. Work needs to be done locally to make school deans aware of the need for school teachers and educators. Strengthen the connection of schools with the local resources, allowing students to engage in goal-oriented activities leveraging on new digital technologies to tackle real-life problems, is a key issue.

To know more about Digital Do It Yourself. . .

The DiDIY project has ended in June 2017. All its results, however, are still available on the DiDIY website, in order to help everybody to understand what DiDIY is, the impacts it will have on the European society, and what to do about it. These results include, but are not limited to:

- More specific fact sheets on the impacts of DiDIY in work, creativity, intellectual property, etc;
- Foundational interpretation of DiDIY;
- A Knowledge Framework and a Vocabulary on DiDIY;
- A DiDIY Manifesto for Positive Social Change;
- A DiDIY Guidance Manual, and several DiDIY Policy Guidelines

All partners of the DiDIY Consortium continue to work in this field, and are interested in cooperating with other organisations, from joint research to training and evangelisation activities on DiDIY and related topics. To contact them, please visit www.didiy.eu



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 644344. The views expressed in this document do not necessarily reflect the views of the EC

The contents of this document are licensed under a Creative Commons Attribution-ShareAlike 4.0. Version 2.0 released on 30 Jun 2017






Annex 4: Fact sheet – Impact of DiDIY on Creative Society



FACT SHEET



Impact of DiDIY on Creative Society

This fact sheet provides the bases to discover DiDIY and its impacts on European society. It is part of a series of fact sheets produced by the European research Project DiDIY, aimed at providing inputs to find together answers to questions such as:

Is Europe really ready for DiDIY? Does Europe really want DiDIY? Does Europe really need DiDIY?

www.didiy.eu



Digital Do-It-Yourself ("DiDIY" for short) is a complex phenomenon, involving social, cultural, technological, economic, and psychological dimensions, stemming from the new ability to **mix physical and informational components** into simple and affordable systems such as 3D printers and Arduino boards.

We call it "Atoms-Bits Convergence", to emphasise that what is happening could become a **new alphabet of knowledge**, hence a new ABC, that may ground and reshape our society thanks to the widespread availability of digital tools that are much cheaper and easier to use than they were just a few years ago, and to the increasing familiarity of many people with such tools. The emergence of the Internet of Things, as the world-wide inclusive ABC system, is further amplifying the potentialities of DiDIY.

But **where these changes are going to lead us is still to be determined**, and is at least partly dependent on the choices that the relevant actors (governments, industries, public administrations, schools and universities,...) are making and will make in the immediate future.

Photograph by Ultra-Lab, used under a Creative Commons BY-SA licence



FACT

DiDIY enables international networks of creative idea-building and inspiration

The internet connects people across national borders and enables creative individuals and groups to find inspiring others who share their passions. With their DiDIY mindset they can work separately or together to design innovative and beautiful things. Our research shows how the internet and online communities play a central role in promoting knowledge, projects and skills, **boosting creativity and creating a dynamic in which sharing and creativity reinforce each other.**

FACT

DiDIY fosters a culture of making and tinkering

Whilst people have always been able to make things and tinker with technological tools, DiDIY **opens up new scenarios and opportunities** where very particular and complex things can be designed and produced as physical objects, and where electronic systems equipped with sensors and actuators can be easily developed. Our research found that projects and platforms using these technologies, alongside local makerspace facilities, are creating new possibilities for making, and for citizen engagement, through online and networked information systems and creative platforms.

FACT

DiDIY supports sustainability through an ethos of fixing and remaking

Where modern societies are often built on an ethos of disposable consumerism, **DiDIY highlights the power of fixing and remaking goods.** 3D printing and other technologies enable people to create the "spare parts" which will make something work again. Our research has found that a culture of making leads individuals to reflect more carefully on their environmental impact, and encourages them to develop innovative and more sustainable solutions to everyday problems.

FACT

DiDIY gives more people an opportunity to express their creativity

DiDIY typically enables more people to use simple and affordable digital tools to express their creativity and opens up avenues for people who may not have been able to become creatively engaged before. Our research among makers found that they were **excited by the potential of digital networks for creative inspiration and sharing** – although some expressed concerns about the sheer scale of digital connectivity. Nevertheless, they readily integrated digital tools into their creative practice, valuing the opportunity to forge collaborative partnerships and work in new ways.



**FACT**

DiDIY is a key dimension of the Maker Movement, which is revolutionising how people think about consumerism

The Maker Movement, and the general resurgence of craft and making, **raise radical questions about the nature of the society** in which we live. The cheap consumer goods which seemed to be the answer to 20th century desires are beginning to be seen as the cause of 21st century problems. Our research found that empowering individuals to actively engage with how things are made, and recognise that they can make things themselves, were key motivations for DiDIY projects. Makers told us they got a deep sense of satisfaction and enjoyment from their making activities.

FACT

DiDIY has been taken up by cultural institutions as a way of rethinking their mission

The novel and engaging processes of DiDIY **have been adopted by cultural organisations which are trying to re-orient their activities toward more hands-on and generative processes.** For example, libraries and museums are now incorporating maker spaces within their walls, so that they can become places where new knowledge and things are invented and made. Our research gives in-depth examples of these kinds of initiatives and presents results from workshops with makers in libraries. We found strong interest in maker spaces being hosted in civic settings, such as schools and libraries, and that interest was growing fast.

To know more about Digital Do It Yourself . . .

The DiDIY project has ended in June 2017. All its results, however, are still available on the DiDIY website, in order to help everybody to understand what DiDIY is, the impacts it will have on the European society, and what to do about it. These results include, but are not limited to:

- More specific fact sheets on the impacts of DiDIY in work, creativity, intellectual property, etc;
- Foundational interpretation of DiDIY;
- A Knowledge Framework and a Vocabulary on DiDIY;
- A DiDIY Manifesto for Positive Social Change;
- A DiDIY Guidance Manual, and several DiDIY Policy Guidelines

All partners of the DiDIY Consortium continue to work in this field, and are interested in cooperating with other organisations, from joint research to training and evangelisation activities on DiDIY and related topics. To contact them, please visit www.didiy.eu



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 644344. The views expressed in this document do not necessarily reflect the views of the EC

The contents of this document are licensed under a Creative Commons Attribution-ShareAlike 4.0. Version 2.0 released on 30 Jun 2017





Annex 5: Fact sheet – Impact of DiDIY on Rights, Responsibilities and Intellectual Property



This fact sheet provides the bases to discover DiDIY and its impacts on European society. It is part of a series of fact sheets produced by the European research Project DiDIY, aimed at providing inputs to find together answers to questions such as:

Is Europe really ready for DiDIY? Does Europe really want DiDIY? Does Europe really need DiDIY?

www.didiy.eu



Digital Do-It-Yourself ("DiDIY" for short) is a complex phenomenon, involving social, cultural, technological, economic, and psychological dimensions, stemming from the new ability to **mix physical and informational components** into simple and affordable systems such as 3D printers and Arduino boards.

We call it "Atoms-Bits Convergence", to emphasise that what is happening could become a **new alphabet of knowledge**, hence a new ABC, that may ground and reshape our society thanks to the widespread availability of digital tools that are much cheaper and easier to use than they were just a few years ago, and to the increasing familiarity of many people with such tools. The emergence of the Internet of Things, as the world-wide inclusive ABC system, is further amplifying the potentialities of DiDIY.

But **where these changes are going to lead us is still to be determined**, and is at least partly dependent on the choices that the relevant actors (governments, industries, public administrations, schools and universities,...) are making and will make in the immediate future.

Photograph by Tony Buser, used under a Creative Commons BY-SA licence

**FACT**

DiDIY poses challenges to exclusive Intellectual Property Right (IPR) systems

As 3D printing, and digital fabrication in general, grow, there is evidence of infringement of exclusive IP rights, such as copyright, patents, design rights and trademarks, albeit on a small scale. We have found that current IPR systems **are only partially fit to protect commons based approaches**, as free/open licenses are generally based in copyright, which can protect the shared works only partially.

FACT

Commons based hardware projects provide an alternative to exclusive IPR systems

Traditional, exclusive IPR protection like patents requires parties to request permission to contribute to the adaptation and further development of hardware designs and thus hinders collaborative development. We have found that a growing number of communities sharing their intellectual and creative DiDIY efforts under non-exclusive, free license arrangements **shows successful alternatives to the traditional exclusive IP licensing arrangements**. So called Open Design, Open Source Hardware, or Free Hardware Design refer to projects that are published under free licenses providing all community members the rights to build, adapt, copy and share original or modified versions. Hundreds of thousands of such commons hardware projects can already be found on online sharing platforms such as Thingiverse, Libre3D, OpenBuilds, Open Hardware Repository, Fritzing and Wevolver. Several of these cases have been presented and discussed in the DiDIY Project blog (www.didiy.eu/blogs).

FACT

DiDIY activities can benefit from IPR exemptions for private, non-commercial uses

As is the case for traditional DIY and repair activities, DiDIY activities tend to be for private, non-commercial use (sale of self made objects is always an option, but this typically is not the original intent). Many IPR legislations **include exemptions for such uses**, in particular in copyright, design rights and patent rights. Trademarks are infringed by use in the course of trade of the same mark on similar goods. When there is no trade at all, these should not be applicable. We have found that if these exemptions could be strengthened, to encourage DiDIY activities, they could extend the life and usefulness of physical products, protect consumer rights, and contribute to a more sustainable planet.



**FACT**

Commons based Open Hardware Designs present different business models.

Whereas traditional business models typically required large upfront investments that on its turn required hierarchical control structures to earn back the investments, Open Source Hardware **works differently**. Typically communities form around such projects where the burden of R&D is shared between various members. As the designs are shared under non-exclusive conditions anyone can engage in the production and sale of the products resulting from these designs. Much can be learned from the Free Software and Open Source Software ecosystems that have so successfully been producing myriad of software projects over the last 30 years. A combination of business models is used. First, the sale of physical products based on shared designs typically occurs at cost price plus margin. Second, leading developers in the community with a demonstrated track record of their skills can offer added value services of various types. . We have found that, combined with DiDIY, these alternative business models can offer, to both new and existing companies, many opportunities to succeed and protect existing jobs, or create new ones.

FACT

DiDIY requires to rethink product liability

Product liability is a consequence of the so called "duty of care", which is a legal obligation to adhere to a standard of reasonable care when manufacturing and selling products. The advent of DiDIY, however, problematises this issue, by enabling many more individuals to make products that may contain defects that might prove unsafe. The DiDIY practice of making artefacts oneself - as hobbyist, amateur or inhouse - **does not necessarily follow the same standards**, typically is not certified and tends to be non-market. This ultimately has consequences for the social contract and the way we think about product responsibility and risks. We have found, however, that the best way to face this challenge is a combination of education, and minimal changes to current laws and regulations.

To know more about Digital Do It Yourself. . .

The DiDIY project has ended in June 2017. All its results, however, are still available on the DiDIY website, in order to help everybody to understand what DiDIY is, the impacts it will have on the European society, and what to do about it. These results include, but are not limited to:

- More specific fact sheets on the impacts of DiDIY in work, creativity, intellectual property, etc;
- Foundational interpretation of DiDIY;
- A Knowledge Framework and a Vocabulary on DiDIY;
- A DiDIY Manifesto for Positive Social Change;
- A DiDIY Guidance Manual, and several DiDIY Policy Guidelines

All partners of the DiDIY Consortium continue to work in this field, and are interested in cooperating with other organisations, from joint research to training and evangelisation activities on DiDIY and related topics.

To contact them, please visit www.didiy.eu



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 644364. The views expressed in this document do not necessarily reflect the views of the EC

The contents of this document are licensed under a Creative Commons Attribution-ShareAlike 4.0. Version 2.0 released on 30 Jun 2017

