

# Intellectual Output 1

A4 Module development  
LESSON PLAN 4



Deliverable: IO1.A4

15.10.2021

EA

Authored by: Georgios Mavromanolakis

Project Number: 2020-1-UK01-KA201-078934

## Contents

Empowering innovation in TE(A)M through IP awareness.....	1
1.1.1 Learning objectives and IP topics.....	2
1.1.2 Links to curriculum.....	2
1.1.3 Duration.....	3
1.1.4 Extra materials required.....	3
1.2 Step-by-step instructions.....	3
1.2.1 Introduction.....	3
1.2.2 Preparation.....	5
1.2.3 Implementation.....	6
1.2.4 Conclusion.....	7
1.3 Key questions for knowledge testing.....	8
1.4 References or additional resources.....	8

This lesson plan is about the IP concept of designs. Everyday all of us use products and objects of various types which have certain appearance for e.g. aesthetic reasons, functional purposes or ergonomics. What is not widely known is that the designs of products or objects is also an IP asset with rights and therefore can be protected by law. Through this lesson plan we first define and understand what is a design. Then we try ourselves to design an object using 3D CAD software. We combine this activity with the subject of educational robotics and space exploration as both these subjects usually attract the interest of school students. We can take for instance as starting point the presentation of a robotic vehicle or space rover.

### 1.1.1 Learning objectives and IP topics

The learning objectives of this lesson plan are:

- To acquire understanding of what designs are.
- To practice using a 3D CAD software tool to design a toy rover.

### 1.1.2 Links to curriculum

This lesson plan can be linked to the following curriculum domains:

- Information technology and computer science
- Robotics and space exploration
- Engineering and 3D CAD
- Entrepreneurship

### **1.1.3 Duration**

About 90 minutes or equivalent of two standard classroom hours are needed to complete this lesson plan in a classroom of 20-25 students. This lesson plan or part of it can also be implemented in combination with the lesson plans of copyright and trademarks.

### **1.1.4 Extra materials required**

Laptops or PCs with network connection. About 1 or 2 students per laptop or PC. Teacher has to setup a class in Tinkercad (<https://www.tinkercad.com/>) so students can join in and use the free online 3D CAD environment.

## **1.2 Step-by-step instructions**

The lesson plan is divided in four inquiry phases, namely introduction, preparation, implementation and conclusion. The latter one consists of presentation and discussion subphases.

### **1.2.1 Introduction**

In this phase the general topic to be studied or investigated is presented briefly and interest about it is stimulated and raised. The focus of this lesson plan is on one hand the broad and abstract concept of designs and on the other the subject of robotics and in particular the one of robotic vehicles and its application for space exploration with which will be linked. The latter is generally considered to be more engaging for students, thus the teacher can start by showing popular examples of robotic vehicles - rovers for space exploration from ESA and NASA. Students may be also asked to quickly search the web for some minutes and find themselves some examples.



This space-rover was designed for man...  
yankodesign.com



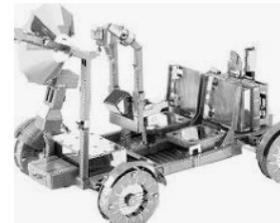
Perseverance rover marks 100th Mars day on the ...  
space.com



NASA keeps sending rovers to Mars, and t...  
cnet.com



MODA – Online Summer Camp...  
museumofdesign.org



*Image 1: Examples of robotic vehicles for space missions*

Once this is done then the focus is directed to the IP concept of designs. Generally speaking this IP concept is not widely known therefore the teacher can give a formal definition of the term, its purpose and use as given by the World Intellectual Property Organization and the European Union Intellectual Property Office:

***What is a design? A design is the IP right that covers the appearance of a product. In its legal definition, it is the outward or visible appearance of the whole or parts of the product resulting from its features. These features can be lines, colours, shapes, textures, contours, materials or ornamentation. This very broad definition covers almost any creation with visible aspects. The following can be protected as designs:***

- ***any industrial or handicraft item or product***
- ***packaging***
- ***graphic symbols***
- ***parts assembled into a complex product***
- ***drawings and art work***

***A product does not have to be produced on an industrial scale or have artistic value in order for it to be a design.***

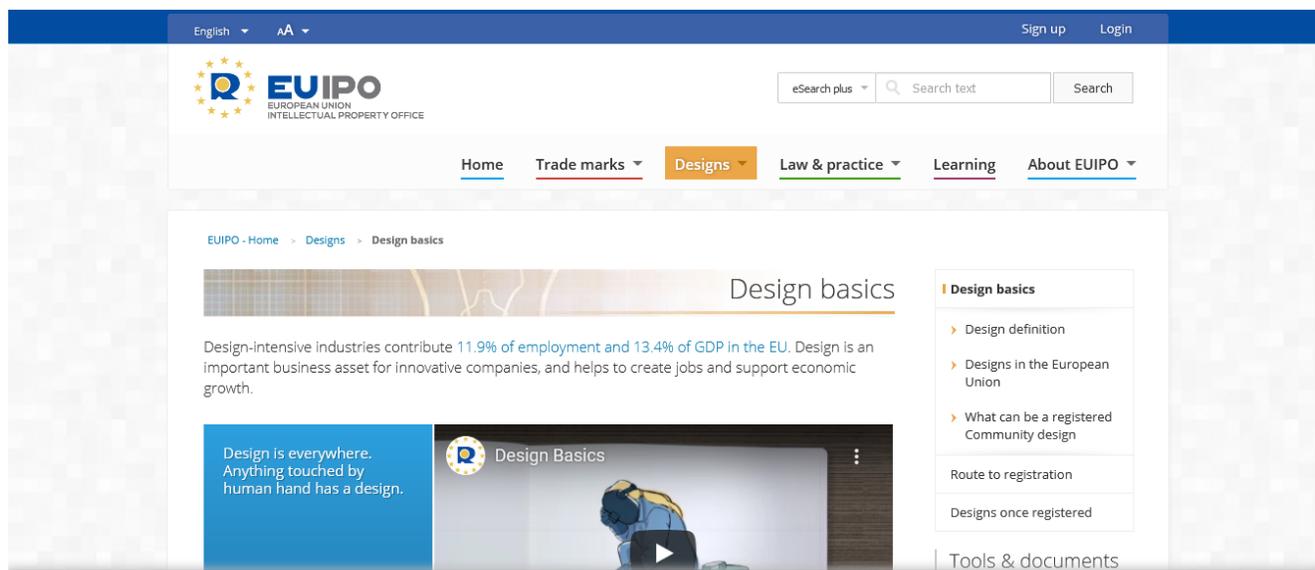
Brief information about how a design is protected can be given as follows?

A design needs to be registered in order to get full protection. Designs may be registered:

- at country level through national IP offices.
- at European Union level as a Community design that covers all EU Member States automatically with one single registration via the European Union Intellectual Property Office (EUIPO)
- through an international application at the World Intellectual Property Organization (WIPO).

In the European Union, the initial period of protection is five years from the date of filing the application. Protection can be renewed for additional periods of five years each, up to a maximum of 25 years.

Then the teacher can ask students to discuss whether they think that designs are an important concept of IP or if they play a significant role in our everyday life and in the commercial and industrial world. Students are encouraged to express their views and thinking freely and to discuss their opinions.



*Image 2: Resources of the European Union Intellectual Property Office about designs  
Source: EUIPO (<https://euipo.europa.eu/ohimportal/en/design-basics>)*

## 1.2.2 Preparation

In this phase the teacher describes the task that students have to work on during the implementation phase. The objective is students to practice first hand how to use a 3D CAD tool to design a toy gadget like a robotic rover. Students can first be divided in small groups of 2 to 3 persons so that they work collaboratively in one laptop or PC per group.

The task that students have to complete is as follows:

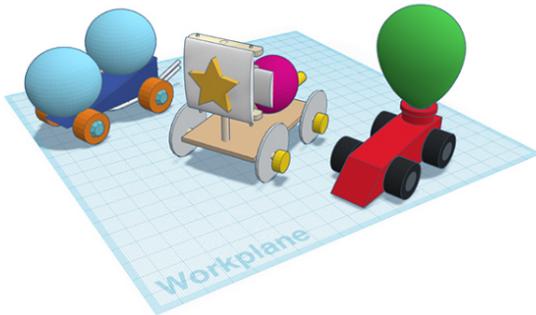
***Imagine that ESA or NASA launch a campaign to attract the interest of the public and especially the youth on space exploration. They publish a school competition where students have to design a robotic vehicle or rover. The winning proposal will be produced as a toy gadget for young kids or can be an animated character in a short film or cartoon series. The competition criteria state that only registered designs can be submitted. You and your friends would like to participate in the competition!***

Each group of students joins the online class in Tinkercad (<https://www.tinkercad.com/>) and use the 3D CAD tool to design its gadget rover idea. The objective is not to create something complex and sophisticated but rather to explore and experience first hand the process of 3D designing an object.

[Gallery](#) [Blog](#) [Learn](#) [Teach](#) [Q](#) [Sign in](#) [JOIN NOW](#)



**AUTODESK®  
TINKERCAD®**



Design a Balloon Powered Car Try it! ◀ || ▶

**From mind to design in minutes**

Tinkercad is a free, easy-to-use web app that equips the next generation of designers and engineers with the foundational skills for innovation: 3D design, electronics, and coding!

[Start Tinkering](#)
[Join your class](#)

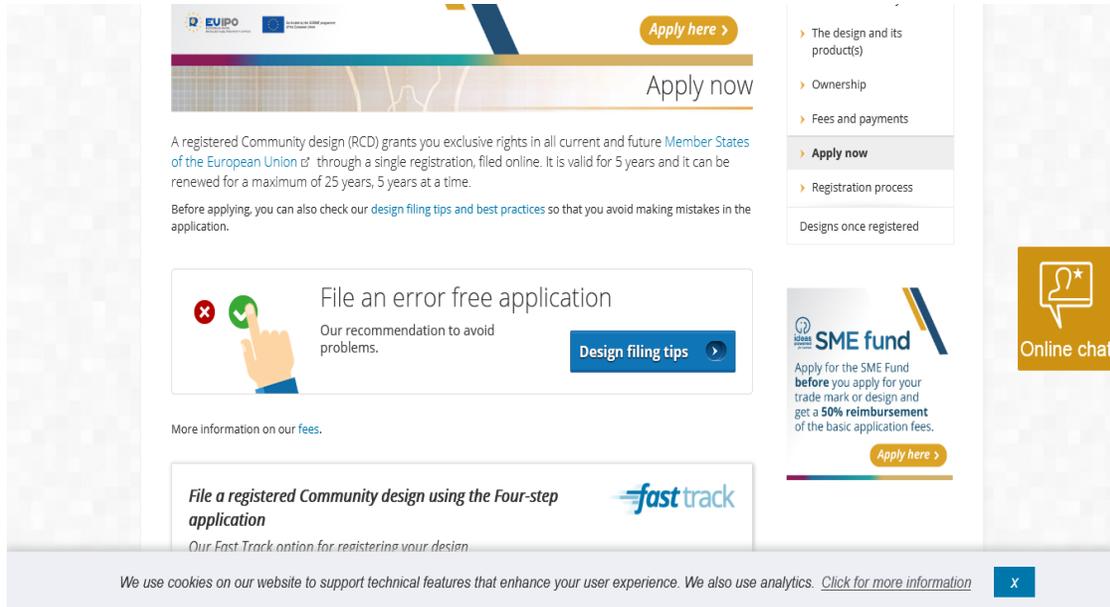
*Image 3: Tinkercad, online 3D CAD tool  
Source: Autodesk Tinkercad (<https://www.tinkercad.com/>)*

### 1.2.3 Implementation

In this phase students work individually or collaboratively in small groups. From time to time and depending on progress, the teacher reminds students that this activity is related to the general concept of IP which in additions to copyrights, trademarks and patents includes also that of designs. In this context he/she also explains and reminds that ***“the success and importance of a design is in its appeal to the product’s users. Users are often attracted by highly creative designs. New shapes or colours can give a strong boost to the sale of ordinary products and therefore, the design of the product can become a key element in a company’s effort to make its products more attractive to users. Consequently, industrial designs can have a very high commercial value, and a manufacturer may obtain a decisive advantage in the market by creating a new look for its product.”***

Once finished with the main task of designing a gadget rover themselves then students have to make a ppt slide to present later the object they designed. Furthermore, if time permits,

they may visit the fasttrack registration service of the European Union Intellectual Property Office at <https://euipo.europa.eu/ohimportal/en/rcd-route-to-registration> and explore how to apply online for registration of their designs!



*Image 4: Design registration service and online application process of the European Union Intellectual Property Office*

*Source: <https://euipo.europa.eu/ohimportal/en/rcd-route-to-registration>*

## 1.2.4 Conclusion

In the conclusion phase each student team presents its slide of designed object and discusses it briefly. When all teams finish their presentations then an around-the-classroom concluding discussion can start. The discussion points can be coordinated by the teacher and may be touches upon the following:

- What a design is?
- Can a registered design be freely used by a company/individual/organization other than the creator?
- Can a design be sold or bought?
- For how long a registered design is protected by EU law?
- Are designs play a significant role in our everyday life?
- Are designs valuable for companies?

The concluding discussion helps students to fully understand the importance of designs, and in general of IP, in the commercial and industrial world which affects everyday life. At the end the lesson plan can be completed with a short wrap-up of its main topics addressed, steps or tasks and objectives, and final conclusions drawn.

### 1.3 Key questions for knowledge testing

The lesson plan can be accompanied by a short quiz of key questions that can be used to check the learners' knowledge acquisition. Correct answers are marked in bold.

Question 1: Designs are types of IP [False] **[True]**

Question 2: Registered designs are protected by European law for maximum of 25 years [False] **[True]**

Question 3: A design cannot be sold or bought by a company/creator [True] **[False]**

Question 4: A design is a valuable business asset of companies **[True]** [False]

### 1.4 References or additional resources

World Intellectual Property Organization

<https://www.wipo.int/about-ip/en/>

<https://www.wipo.int/designs/en/>

European Union Intellectual Property Office

<https://euipo.europa.eu/ohimportal/en>

<https://euipo.europa.eu/ohimportal/en/design-basics>

<https://euipo.europa.eu/ohimportal/en/rcd-route-to-registration>

Greek Copyright School Project of the Hellenic Copyright Organization (HCO)

<https://copyrightschool.gr/index.php/en/teachers>

Autodesk Tinkercad <https://www.tinkercad.com/>