TOYLABS

ENABLING AN OPEN INNOVATION MODEL FOR EU TOY INDUSTRY SMES THROUGH CO-CREATION WITH FABLABS, SAFETY EXPERTS AND CUSTOMER COMMUNITIES
732559

Documentation on Pilot Scenarios Execution - v1

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Delivery date		25/04/2018	

Version History Table

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V0.1	15/12/2017	AIJU	Table of content and first draft
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V0.21	15/01/2018	AIJU	Review
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V0.4	22/03/2018	JUEMA	Section 3 (Updated info from doll pilot)
V0.5	23/03/2018	V-CUBES	Section 3 (Updated info from Rubik Cube pilot)
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V0.9	26/4/2018	NTUA	Review final version
V1.0		FABLAB LECCE	Updated final version

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ABSTRACT

This deliverable is part of the WP5 - ToyLabs Piloting and Evaluation. More specifically, it is the report of the execution of the pilots, from the operation of the platform and the registration of the users, to the last tasks carried out in the process of developing the first prototypes. This first report serves as a substantial feedback for the refinement of the platform and for the improvement in the methodology of implementation of the piloting tasks and will be the basis on which the final deliverable of the piloting execution will be developed.

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1 INTRODUCION

ToyLabs project proposes the development of an unique, unified methodology that will create a multisector-stakeholder network and consequently a multi-sided platform where key players in the toy industry value network are brought together and collaborate closely in order to come up with new, innovative toys and games that will be able to quickly enter the market, will respond to a clearer market demand, will be cost effective and will be customised in order to be able to enter also other EU markets.

This deliverable is part of the Work Package 5 "ToyLabs Piloting and Evaluation", whose objective is the planning, management and evaluation of the pilots application; with the aim of demonstrating both the scientific innovations and the commercial value proposition of the general approach of ToyLabs. The deliverable, in addition, is a continuation of deliverable 5.1 "Pilots Readiness Documentation", in which the characteristics of the course of the pilots and also of their evaluation were specified.

In the deliverable D5.1 a pilot implementation plan was elaborated based on three main phases: conceptualisation, design and development. These three phases are developed according to the idiosyncrasy of the new methodology of new product development under ToyLabs, which is based on the continued interaction between the different actors involved in the development of new toys through the combination of continuous validation cycles, to ensure that the products meet the expectations and requirements of the market. In this way, the three main phases of the pilots are based on the use of the tools for collaboration between the different participants:

1) The **Conceptualisation** phase begins with the subscription to the platform, the beginning of a new project (through the introduction of the idea on which we started) and a study of the market and the feedback received by other stakeholders participating in the platform that leads us to obtain the final concept of the product.
2) In the second phase, **Design**, this concept materialises in a specific design thanks to the collaboration with FabLabs, after a selection of the FabLab that best suits the needs of the project. This design is obtained with the use of the platform and its different tools (AR engine, images, direct messages).
3) Finally, the **Development** phase is reached, by which the prototype of the pilot is obtained. In this phase, a virtual prototype is created, a validation is carried out by security experts, and the prototype is tested with end users, who provide feedback that is later used to produce the final version of the prototype.

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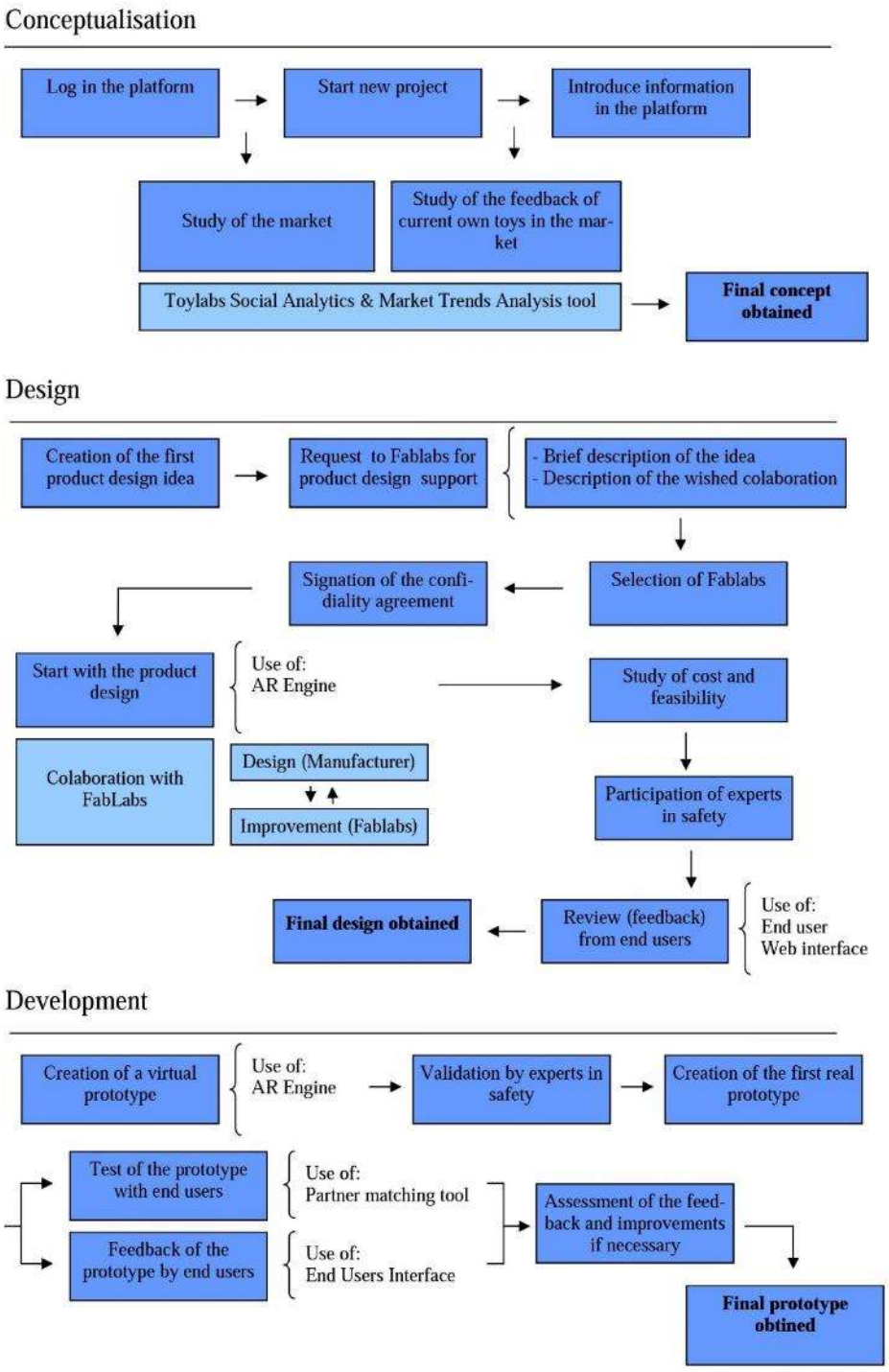

Figure 1 - Scenarios development

The deliverable D5.2. the main objective is the compilation of the progress made in Working Package 5, previously described, until the time it was produced. This deliverable provides the documentation of the pilots operation and execution and will serve as a substantial feedback for the refinement of the platform. This deliverable is a first version of the final deliverable (D5.3) in which both the complete achievement of the pilots and the functionality of the platform and each of its different

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modules is compiled. D5.3 will be based on the consortium's experience with the use and the observation of the platform, collected during the pilots' period. Also, in D5.1. a methodology was designed to collect information through questionnaires and satisfaction surveys of the main users of the platform.

Deliverable 5.2 goals:

- Description of the ToyLabs Platform, modules and tools.
- Report on the current status of the pilots of the project.
- Review of the concordance of the pilots' application with the methodology proposed in D5.2.
- Ensure the correct development of the pilots and the achievement of the objectives set.
- Detection of errors and aspects to improve in the platform.
- Preparation of a forecast of the results of the pilots.

1.1 STRUCTURE OF THE DELIVERABLE

The internal structure and the different sections of the deliverable are detailed below:

1) The first section consists of the description of the preparatory steps that have been achieved to begin piloting. These activities are focused in the registration to the platform and the creation of the organisation profile inside the platform.
2) The second section consists of the detailed description of the operation of the platform. Firstly, the different sections and menus of the platform will be described: register and login, home, dashboard, members and about. Secondly, the methods of use and operation of the three tools included in the platform will be described.
3) The third section specifies the timing of the piloting and the explanation of the minor changes in the execution time of the different activities.
4) The fourth section of the deliverable focuses on the detailed report on the pilot operation to date. It emphasises aspects such as the timing of the pilots and the execution of the different programmed phases (conceptualisation, design and development). The feedback received during the use of the platform is also reflected. The analysis of the operation of the pilots is different between Pilot 1 - Mechanical Puzzle Toys Design and Development (V-Cubes) and Pilot 2 - Dolls & Accessories design and development (JUEMA).
5) Next, a report is included, where with some first conclusions from the pilots' operation; obtained through the description of the previous section. Here, the assessment of the execution of the pilots, with their strengths and weaknesses is reflected; and also the usability of the platform and a list of operating errors.

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6) Finally, an end-pilot perspective has been redacted, in which the further tasks to be performed are specified.

2 PLATFORM OPERATION

This first section of the deliverable focuses, on the one hand, on the specification of the different sections of the platform, and on the other hand, on detailing the preparatory steps for the start of the execution of the pilots.

2.1 PREPARATORY STEPS FOR THE PILOTS APPLICATION

There were five steps that were carried out for the registration in the platform:

1st - Access to the ToyLabs platform.

The ToyLabs Platform is available through the web; In this way it can be accessed from any device connected to the Internet. The web address of the platform is https://platform.toylabs.eu. When a user accesses it, the main screen appears, in which user can see the highlighted projects, the registered organisations and the general information about the platform.

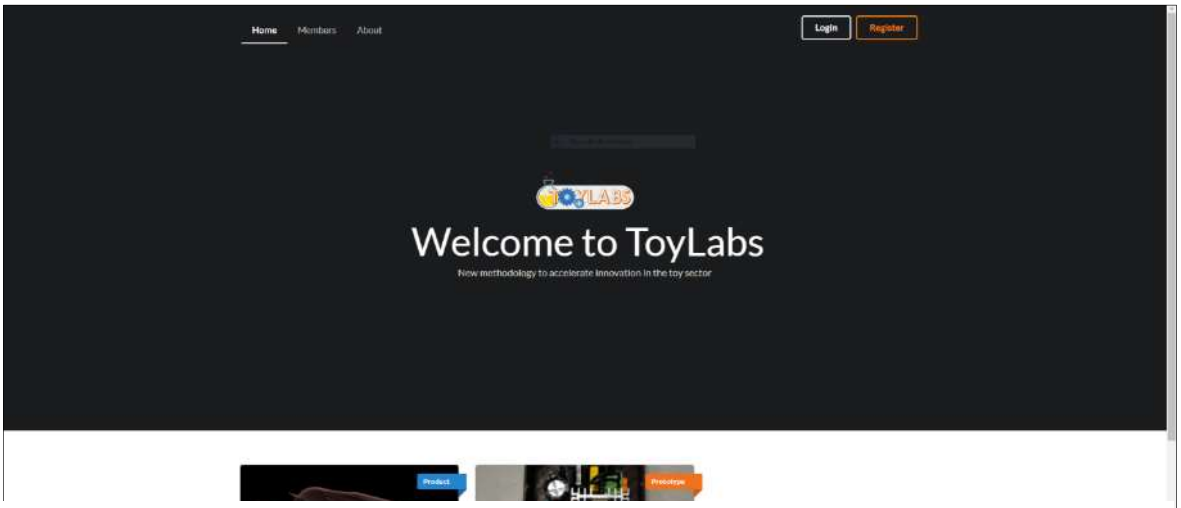

Image 1 - ToyLabs Welcome screen

2nd - Register as a private person in the ToyLabs platform.

The platform offers users several options to register on the platform: 1) By clicking on the "register" button and creating an account with a username, email and password. 2) Entering directly to the platform through the "log in" button and logging in through the Facebook or Google accounts.

The first step that was carried out for the technical preparation of the pilots was the registration of the people involved in the pilots. Next, two lists are shown.

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The first one includes all registrations in the platform, counting with the test ones and the duplicated users. This happened because users created test accounts to check that all three registration methods function correctly:

id	Name	e-mail	Created at
1	Marios Phinikettos	finikm@gmail.com	10/18/17 12:49:06 PM
3	Sotiris Koussouris	skous@me.com	10/19/17 1:33:43 PM
4	cbot	cbot@epu.ntua.gr	10/19/17 2:45:25 PM
5	Raúl Esteban	raulestebancrespo@gmail.com	10/19/17 2:46:23 PM
6	Marios Zacharias	marios.zacharias@gmail.com	10/19/17 3:02:38 PM
7	Christos Ntanos	cntanos@epu.ntua.gr	10/19/17 3:44:03 PM
8	Fenareti Lampathaki	fenareti@suite5.eu	10/20/17 1:47:55 AM
9	Dimitris Panopoulos	dpanop@gmail.com	10/20/17 7:02:44 PM
10	Evmorfia Biliri	ebiliri@epu.ntua.gr	10/26/17 6:53:49 PM
11	Nikola Chernev	n@barecreative.co	10/27/17 5:32:31 PM
12	Sotiris Koussouris	skoussouris@gmail.com	10/27/17 5:35:45 PM
15	Sotiris Koussouris	skous@live.com	10/27/17 5:39:09 PM
16	anas asas	erreqrq@ewqr.ee	10/27/17 5:39:48 PM
17	Konstantinos Verdes	kverdes@v-cubes.com	11/1/17 11:38:58 AM
18	Ariadni Michalitsi-Psarrou	amichal@epu.ntua.gr	11/9/17 12:43:05 PM
19	Dimitris test	dpano@mail.ntua.gr	11/10/17 5:06:31 AM
20	George Koutoupis	georgekoutoupisgr@hotmail.com	11/13/17 4:40:50 PM
21	skous13	skous@epu.ntua.gr	11/13/17 7:26:29 PM
22	Sotiris Test	skoussouris@hotmail.com	11/14/17 2:15:37 PM
23	Sotiris K	skoussouris@teemail.gr	11/14/17 2:25:27 PM
24	Ina Dumitriu	ina@fablab.ro	11/14/17 6:03:50 PM
25	duffy duck	dduck@in.gr	11/14/17 6:05:26 PM
26	testuser13	testuser13@in.gr	11/14/17 6:24:10 PM
27	cesar2	ewr@rt.gr	11/15/17 3:59:33 PM
28	Marios Test	me@toylabs.eu	11/30/17 12:14:17 PM
29	Christos Botsikas	cbotsikas@gmail.com	11/30/17 1:03:21 PM
30	Thomas Kestis	design@v-cubes.com	11/30/17 3:56:58 PM
31	Cristiano Maci	info@fablablecce.org	12/20/17 1:14:03 PM
32	Daniele Piscozzo	pisco992@gmail.com	12/20/17 1:25:54 PM
33	Luca Ciccarese	luca.cicca86@gmail.com	12/21/17 12:38:04 PM
34	Start Smart	info@startsmartsrl.com	12/22/17 3:03:24 PM
35	Raúl Esteban - AIJU	raulestebanaiju@gmail.com	1/9/18 1:38:15 PM

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36	Carolina Santonja Picó	carolinasantonja@aiju.info	1/18/18 1:10:27 PM
37	Ina Dumitriu	allyahinblack@gmail.com	1/26/18 1:55:22 PM
38	cesar carrion	ccarrion@gmail.com	2/1/18 7:29:35 PM
39	OLGA TRAVINA	olga@juema.es	2/2/18 1:13:38 PM
40	Raúl Esteban Crespo	raulestebancrespo@outlook.es	2/20/18 3:46:11 PM
41	Cesar Carrion	cesar.carrion@gmail.com	2/26/18 5:46:35 PM
42	George bikas	gbikas@suite5.eu	3/22/18 11:24:48 AM
43	George Bikas	bikgrgphx@hotmail.com	3/23/18 12:49:45 PM

Table 1 - List of total users of the Platform

The second list, includes the real users of the platform. This list has eliminated duplicate accounts and also those that were created with the sole purpose of testing the operation of the registry to the platform:

id	Name	e-mail	Created at
1	Marios Phinikettos	finikm@gmail.com	10/18/17 12:49:06 PM
6	Marios Zacharias	marios.zacharias@gmail.com	10/19/17 3:02:38 PM
7	Christos Ntanos	cntanos@epu.ntua.gr	10/19/17 3:44:03 PM
8	Fenareti Lampathaki	fenareti@suite5.eu	10/20/17 1:47:55 AM
9	Dimitris Panopoulos	dpanop@gmail.com	10/20/17 7:02:44 PM
10	Evmorfia Biliri	ebiliri@epu.ntua.gr	10/26/17 6:53:49 PM
11	Nikola Chernev	n@barecreative.co	10/27/17 5:32:31 PM
15	Sotiris Koussouris	skous@live.com	10/27/17 5:39:09 PM
16	anas asas	erreqrq@ewqr.ee	10/27/17 5:39:48 PM
17	Konstantinos Verdes	kverdes@v-cubes.com	11/1/17 11:38:58 AM
18	Ariadni Michalitsi-Psarrou	amichal@epu.ntua.gr	11/9/17 12:43:05 PM
20	George Koutoupis	georgekoutoupisgr@hotmail.com	11/13/17 4:40:50 PM
24	Ina Dumitriu	ina@fablab.ro	11/14/17 6:03:50 PM
29	Christos Botsikas	cbotsikas@gmail.com	11/30/17 1:03:21 PM
30	Thomas Kestis	design@v-cubes.com	11/30/17 3:56:58 PM
31	Cristiano Maci	info@fablablecce.org	12/20/17 1:14:03 PM
32	Daniele Piscozzo	pisco992@gmail.com	12/20/17 1:25:54 PM
33	Luca Ciccarese	luca.cicca86@gmail.com	12/21/17 12:38:04 PM
34	Start Smart	info@startsmartsrl.com	12/22/17 3:03:24 PM
35	Raúl Esteban - AIJU	raulestebanaiju@gmail.com	1/9/18 1:38:15 PM
36	Carolina Santonja Picó	carolinasantonja@aiju.info	1/18/18 1:10:27 PM
37	Ina Dumitriu	allyahinblack@gmail.com	1/26/18 1:55:22 PM
38	cesar carrion	ccarrion@gmail.com	2/1/18 7:29:35 PM

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39	OLGA TRAVINA	olga@juema.es	2/2/18 1:13:38 PM
41	Cesar Carrion	cesar.carrion@gmail.com	2/26/18 5:46:35 PM
43	George Bikas	bikgrgphx@hotmail.com	3/23/18 12:49:45 PM

Table 2 - List of real users of the Platform

Therefore, the are a total number of the 43 registrations into the platform, of which 27 are final users. This means that there are 27 people until now making use of the platform for testing and piloting. These people are all related to the project, being staff of any of the member organisations of the ToyLabs consortium.

3rd - Registration of an organisation on the ToyLabs platform

The registration of the organisation is a step after the creation of the user. Once the members of the consortium organisations created their users, they proceeded to create the profile of the organisation they represented.

For this, once users accessed the platform for the first time, a person from each organisation created the profile of the organisation through the following steps:

1) Clicking on the profile.
2) 1) Clicking on Edit Profile.
3) In the "Organisation" section clicking on the "create" button.
4) Completing each of the required fields (name of the organisation, legal name, legal form, description, address, website, contact, facilities, services, certifications, etc.)
5) Finally, pressing the "create" button.

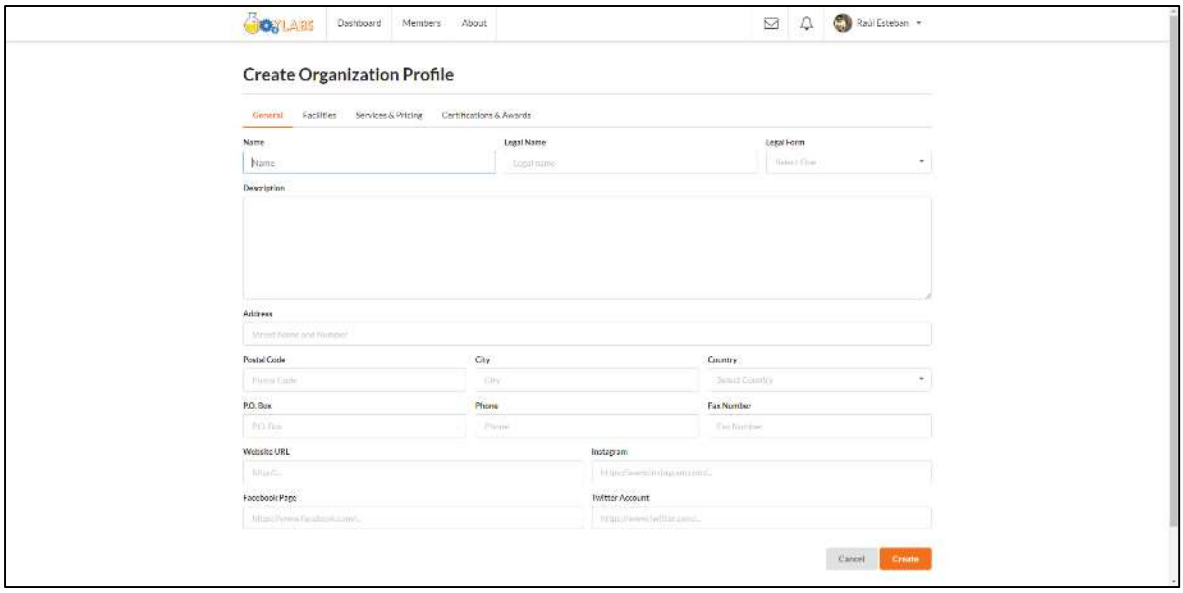

Image 2 - Create Organisation Profile Screen

4th - Specification of the roles of each organisation.

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At this point, in which the users are already registered and the organisations have been created, we proceeded to the specification of what would be the role of each organisation when carrying out the pilots. In the following table are the institutions created on the platform and the role each of them has within the pilot operation:

Organisation	RoI for the piloting
ACME Corporation	Type of institution: Toy manufacturer. Description: Test Manufacturer
EPU	Type of institution: Toy manufacturer. Description: Test Manufacturer
JUEMA	Type of institution: Toy manufacturer. Description: Spanish doll manufacturer. Performs all the stages of doll creation from design, dress making to production, finishing and packaging.
VERDES INNOVATIONS	Type of institution: Toy manufacturer. Description: The sole producer of V-CUBE products, a superior range of high quality rotational puzzle cubes manufactured under the unified V-CUBE technology, invented and patented worldwide.
FabLab Romania	Type of institution: FabLab. Description: making (almost) anything using the machines and tools available: laser cutters, 3d printers, cnc routing machines and many more. In the 11 years that have passed since first opened we have tackled small to medium scale projects, from making real-estate models to awards to festival installations.
FabLab Lecce	Type of institution: FabLab. Description: Innovative start-up founded in 2014 that provide technologic high value services about digital

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	fabrication world, such as design and 3d modelling consulting services, production of customized and personalized items in particular.
AIJU	Type of institution: Safety Expert Description: AIJU offers quality testing services in any product related to children's leisure. Verification of quality standards, safety and European Community regulations. It has a large team of experts. AIJU ensures the confidentiality of your new products.

Table 3 - RoI of the organisations in the piloting

5th - Linking a personal account to the organisation.

Finally, to complete the profile of users and organisations on the ToyLabs platform, personal profiles were linked with the organisations created.

To request joining an organisation, users performed the following steps:

1) Clicking on the “profile”.
2) Clicking on “edit profile”.
3) In the "Organisation" section, clicking on the "Join" button.
4) Selecting the organisation and clicking on the "Request to Join" button.

Once the steps were completed, the creators (and therefore administrators) of the organisations accepted the requests.

2.2 OPERATION DESCRIPTION OF THE MAIN MENUS OF TOYLABS PLATFORM

This section describes the main menus of the platform and their use within the pilot operation. The ToyLabs Platform has five main screens, which encompass all of the platform's functionalities. These screens are: Home, Dashboard, Members, Notifications & Messages and About. All these interfaces have been used in order to ensure that their functionality corresponds to the needs of the final users. A brief description of each section follows. Moreover, the implementation of the 3 main tools of the platform will be evaluated.

Home Screen

This is the first piece of information that is shown to the end user. As detailed before, from here users are able to log in and to register into the platform, moreover, it shows a general view of the different projects that are being carried out.

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Dashboard Screen

This screen only appears after the user has logged in. This section shows to the user all the projects in which he has been enrolled to. It also includes the option to start another project by clicking on the “New Product” button.

For showing the projects the user is currently working on, the platform uses a timeline with the five steps to achieve the new product: Concept, Research, Design, Prototype and Production.

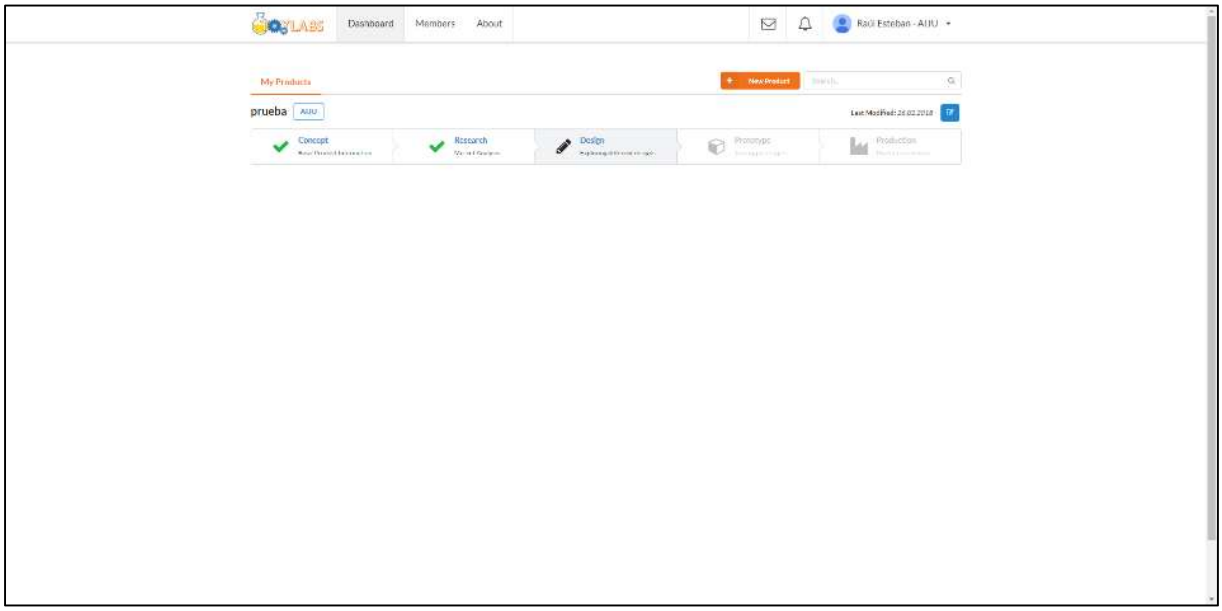

Image 3 - Dashboard Screen

Members Screen

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This screen contains a list of all the member organisations of the Platform. When clicking on any of them, the platform shows the details of these organisations: description, competences, awards, etc.

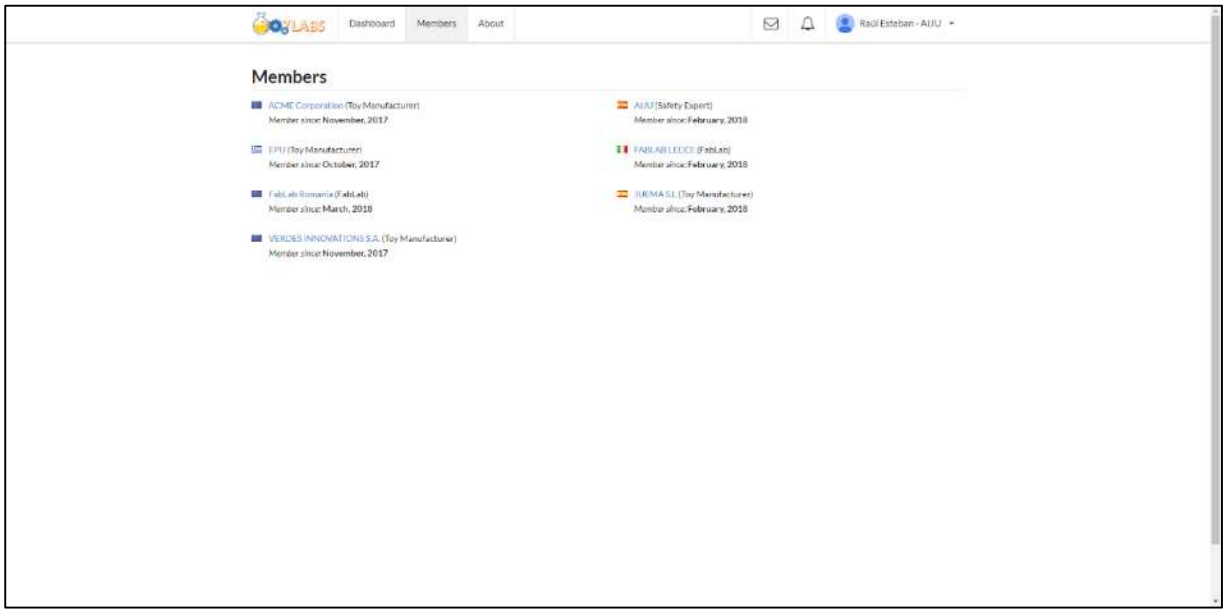

Image 4 - Members Screen

This section is useful for the users because, in the case they are searching for a collaborator in the design of a new product, in this section they will find the one that best suits them.

Notifications & Messages Screen

Users have access to the message module in which they can contact potential new collaborators. When receiving a new message, the Platform shows a notification at the top right corner of the screen. This notification will be available in whichever module or section of the platform the user is in.

On the other hand, notifications about the progress of the product development is shown in a another icon, right next to the message icon.

The functionality of this utility has been one of the first parts of the platform developed and tested, since it is crucial to ensure the appropriate tracing of the projects' progress.

About Screen

This screen is intended to present the main characteristics of the platform, as well as information about the ToyLabs methodology implemented on the platform.

This information has not been added yet. Since this is not an essential part of the platform, it will not affect the pilot operation. The objective is to have it filled before the end of the pilot operation.

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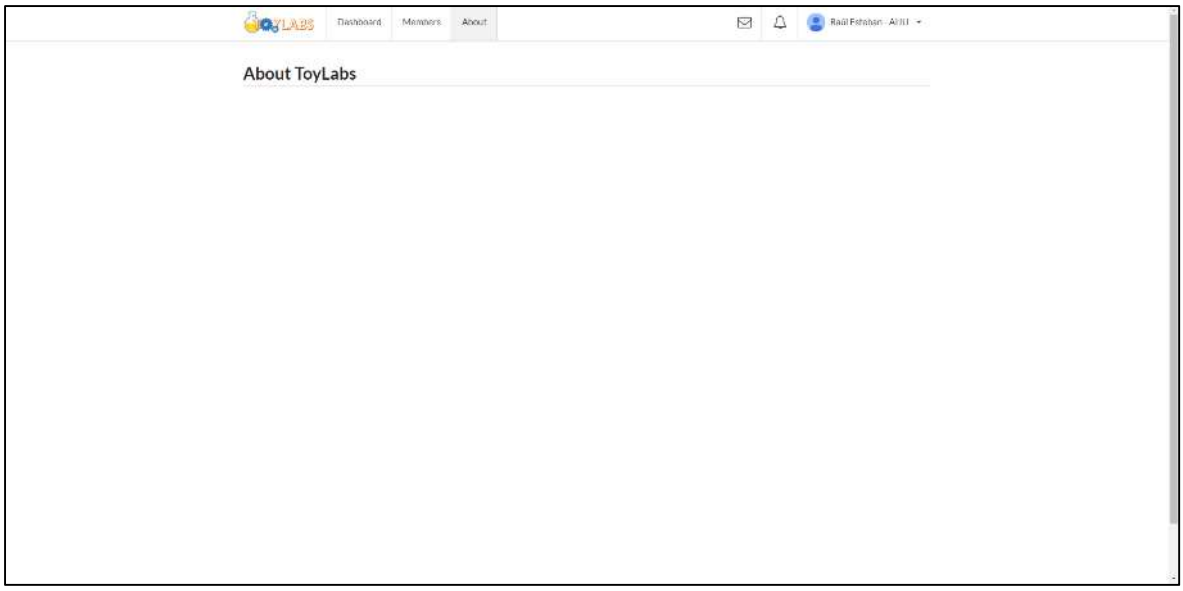

Image 5 - About ToyLabs Screen

2.3 OPERATION DESCRIPTION OF THE TOOLS OF TOYLABS PLATFORM

In this section of the deliverable, the three innovative tools of the platform are going to be presented. All of them have been developed following the requirements established in the WP4 “ToyLabs Integrated Platform Design and Development”, and more specifically in Task 4.2 “Added-Value Components Integration”. These components are: Social Analytics & Market Trends Analysis Tool, Partner Matching & Selection Mechanism and Augmented Reality Engine.

The different tools of the platform are included within the general methodology proposed in ToyLabs. As we have mentioned, this methodology consists of 6 main phases: conceptualisation, design, development, pre-production, production, and commercialisation. Each tool can be accessed according to the level of development of the new product that has been reached. Next, all of them are going to be analysed and its function in the piloting will be detailed.

Social Analytics & Market Trends Analysis Tool

The main functionality of this tool is the research of the trends and social behaviour related to the toys being developed. This helps manufacturers focus their new product in the real needs of the market, increasing its acceptance within final users and costumers. This tool is available when the manufacturer has already

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created the product concept. After the product concept has been described, the next step in the dashboard progress-line is the “Research” which is done with this tool.

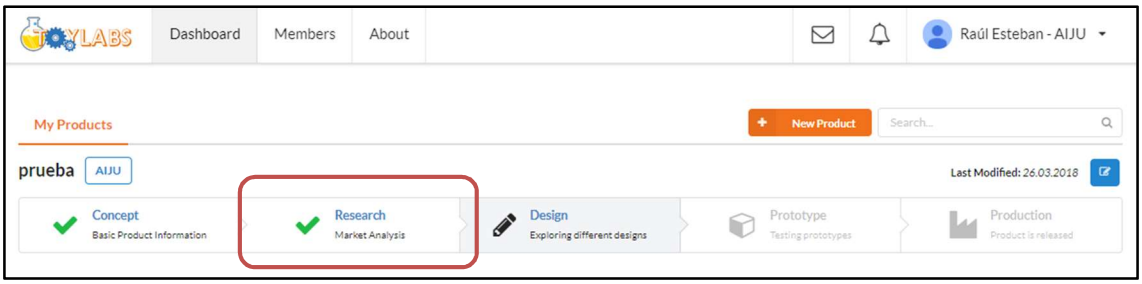

Image 6 - Dashboard progress-line

The component works by harvesting data from social media and other online sources where people express their opinions and have discussions on products/ brands etc. The user that initiates the analysis is responsible for setting the keywords, hashtags, phrases and accounts that will be used for gathering the data. The user is then able to either perform a trend analysis to uncover popular trends in a given domain or collect and analyse customers’ feedback as expressed in the web.

Image 7 - Social Analytics & Market Trends Analysis Tool

The User Interface is responsible for providing the user with insights into the collected data, while guiding him to apply filters, make intuitive queries and browse the results through advanced visualisations.

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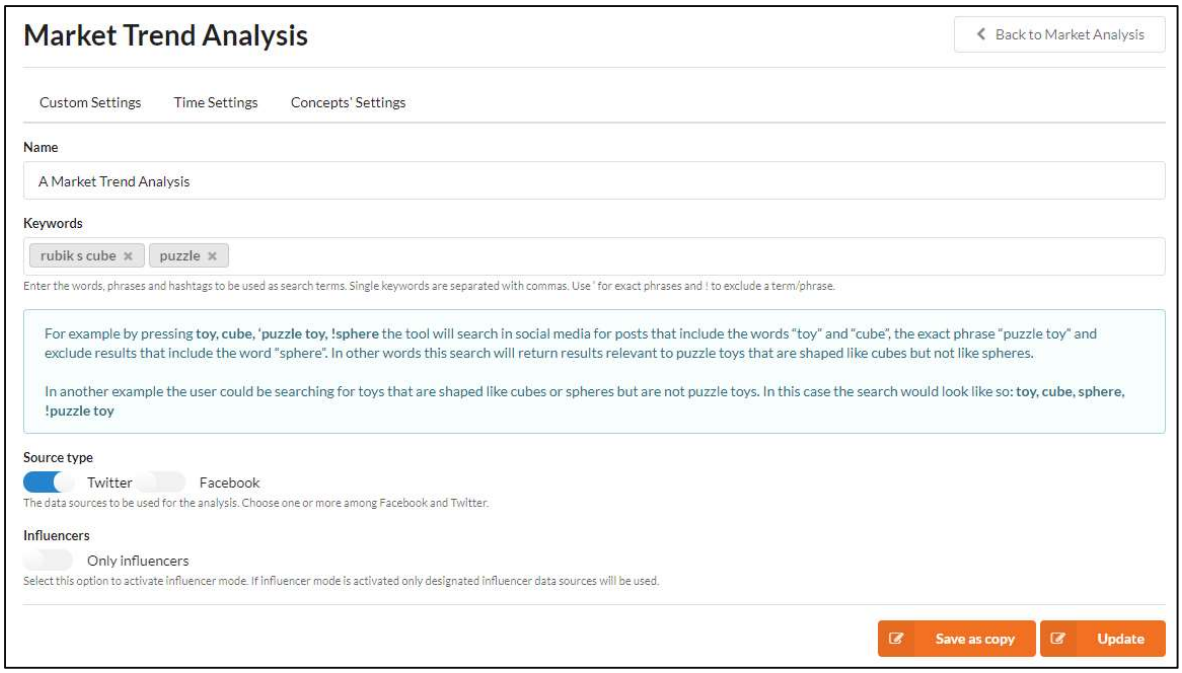

Image 8 - Market Trends Analysis Options

The interface contains descriptions and guides of the various fields and components that can e used. The main concept is that the user chooses to either create a new Trends or a new Social Analytics report, adds the sources, keywords, concepts and parameters, as well as the time-frame for the search and then runs the analysis. The analyses have been performed for each product can be edited or deleted. When viewing the report a set appropriately selected diagrams is displayed.

Partner Matching & Selection Mechanism

This page gives the opportunity of a ToyLabs member to initiate a collaboration with another counterpart. For the purpose of Verdes innovations, in order to proceed with the rapid prototyping of the Product Design, a Fablab with proper competences is needed. A collaboration with Fablab Lecce is initiated.

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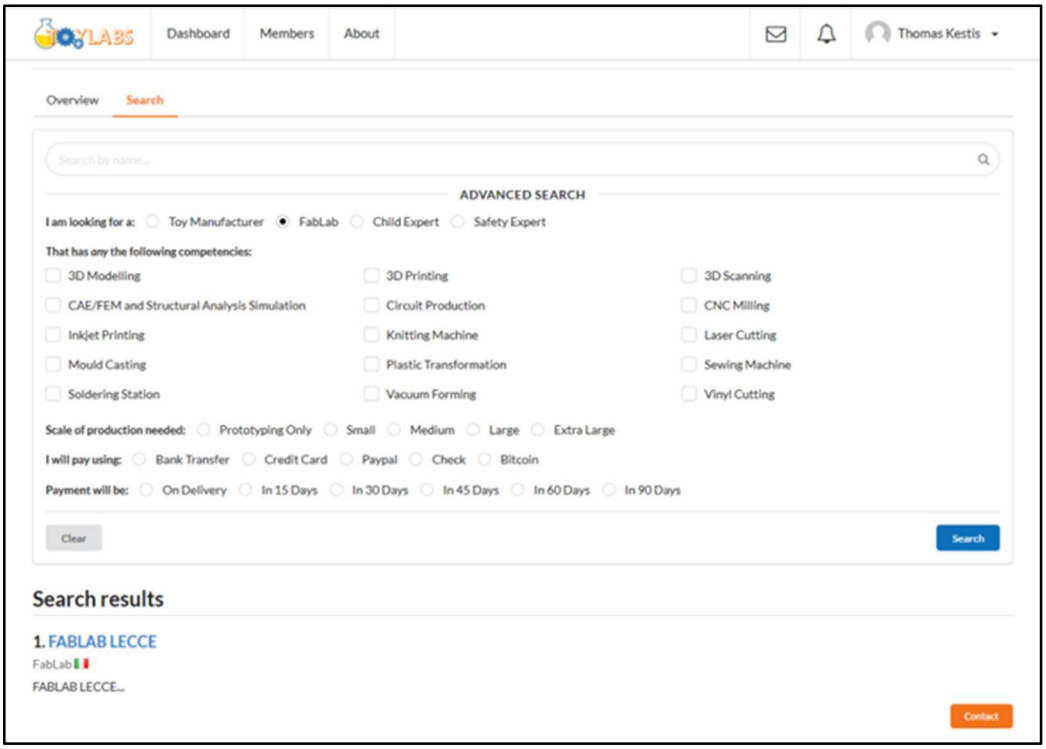

Image 9 - Partner Matching & Selection Mechanism

The appropriate files of the Product Design are uploaded. The Fablab counterpart can now receive the files and proceed with the rapid prototyping process.

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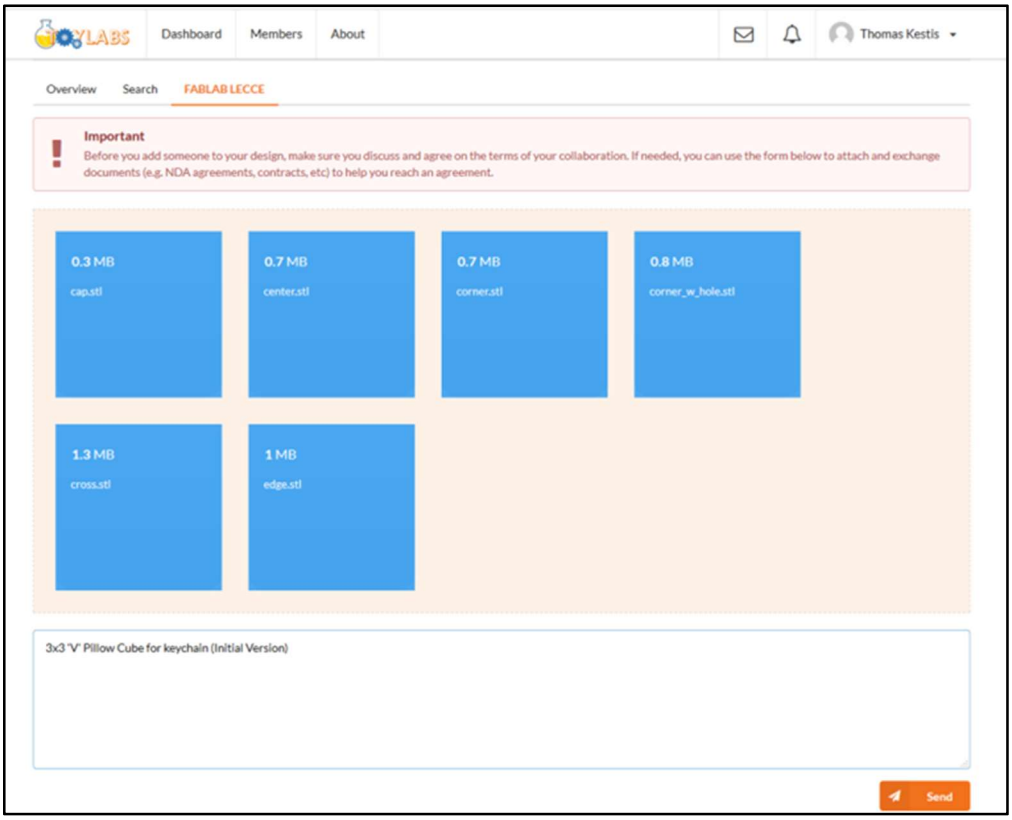

Image 10 - Shared files with the FabLabs

For accessing to this tool of the platform, it is needed to have a concept of the product already developed.

Augmented Reality Engine

Thanks to the AR Engine, users can develop a virtual prototype of the design obtained thanks to the different phases of the ToyLabs methodology. The prototype is based on the previously elaborated design, which, after receiving the feedback from FabLabs, end users and security experts, will be elaborated in VR, for the evaluation of the shape, size and different textures of the product.

Image 11 - Product Design screen and Augmented Reality Tool button.

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Toy Manufacturers (JUEMA and V-CUBES) have already achieved the design phase of the development of their pilots. In this section, and with the help of FabLabs, they have elaborated the first AR prototype.

3 PILOTING AND EXECUTION

This is the main part of the deliverable. This section explains in detail how the execution of the pilots has been developed to date.

First the approach for both pilots is described, secondly, the proposed timing and the achievement of it is analysed, third, the different steps carried out for the achievements of the pilots are detailed, this last part is done differentiated for each one of them.

With this we have obtained a detailed analysis of the progress in the tests of both the ToyLabs methodology and the platform.

3.1 SPECIFICATION OF THE PILOTING EXECUTION

In this project there are two pilots, with the objective of ensuring the usefulness of the ToyLabs methodology, the functionality of the platform and the demonstration of the advantages of using these new tools. The objectives of the pilots and the expected benefits are detailed below:

3.1.1 Mechanical Puzzle Toys Pilot

V-CUBES is the sole producer of V-CUBE™ products, a superior range of high quality rotational puzzle cubes manufactured under unified V-CUBE™ technology, invented and patented worldwide (see pictures below). V-CUBES exports toys at a wide range of countries in all 5 continents, via an international network of distribution partners.

However, those partners only support distribution and direct marketing activities without participating – either actively or by providing early feedback – in the product creation process in any way. Given the fact that the company is addressing many markets and people with different ethnic and cultural backgrounds and even anthropometric characteristics (which is of importance, for example, for deciding about the size of the V-CUBES toys which must fit in the average palm size without being too big or too small), getting feedback from different markets is important for the company and of great interest for the product creation process. In addition to that, the company has not taken advantage of modern technologies like augmented or virtual reality in order to showcase new products before they come to market which would be of value, both from a marketing standpoint and for optimising designs and characteristics on the basis of early feedback by customers.

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The V-CUBES pilot is ideal for demonstrating the innovative characteristics of ToyLabs, mostly regarding the collection of multi-locale user feedback and the application of augmented reality technologies for providing to the worldwide community of V-CUBES enthusiasts opportunities of virtually experiencing products under consideration and providing their preferences and feedback. Furthermore, given the fact that V-CUBES toys are mostly addressed to children over 10 years old, there are plenty of discussions in the social media regarding the niche market of mechanical puzzle cubes and similar toys. So, in the framework of the pilot, the analytics and market prediction tool will be also utilised in order on one hand to get crowd feedback regarding the existing products of the company and on the other hand to capture the worldwide trends in this market, which is of importance for V-CUBES in order to take them into account in designing new toys.

The most important benefits for V-CUBES out of the pilot application of ToyLabs, can be summarized in the following points:

- Get feedback on new product concepts by offering to end-users an AR-based experience of playing with the conceptual designs.
- Build prototypes of new toys in remote facilities (FabLabs) and get recommendations from local end customers and experts groups, both regarding the product itself and regarding proposed customizations per target market.
- Get social-media-based insights regarding the existing V-CUBES toys and new market trends.
- Get customers' opinions via the ToyLabs platform feedback management tool.
- Validate the whole ToyLabs process from conceptualisation to production and commercialization.

Following, the qualitative and quantitative values of the achieving of the prototyping and the results that the consortium will obtain are detailed:

Qualitative Values:

1. Easy access to FabLabs.
2. Accurate prototyping.
3. Eliminate the risk of failure of mould development.
4. Easier tracing of novel ideas from toy inventors that might use the platform.
5. Early safety assessments.
6. Easier collection of feedback from experts prior to marketing.
7. Better understanding of trends. Thus, more accurate orientation for new ideas realisations and new concepts developments.
8. Networking capabilities with labs and experts worldwide.
9. "Data room" recording of the whole process.

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10. Cloud filing of the whole process.
11. Taking advantage of a multiple-stage process in one stop.
12. Decreasing the SME disadvantage of not being able to maintain a permanent R&D department, thus expanding their competency.
13. EU umbrella.

Quantitative Values:

1. 20%. Cost reduction for creating a working prototype.
2. 10%. Cost reduction for safety test.
3. 100%. Elimination of product recalls due to safety regulatios.
4. 200%. Increase in number of experters providing early feedback.
5. 50%. Cost Reduction for access in toy experts.
6. 10%. Decrease of market research expenses.
7. 20%. Increase satisfaction rate of end-users.
8. 15%. Accuracy of Toy market trends detection.
9. 15%. Reduction of cost for toy development process.
10. 10%. Reduction of time for toy development process.

The main reasons for selecting this pilot are detailed in the following table:

Reasons for Selecting the V-Cubes Pilot	
Market feedback	Our worldwide distributors and our social media consumers have expressed numerous times their interest and need to market and acquire a smaller and cheaper version of our best selling item the V-CUBE 3.
Development cost	The proposed pilot will have a low development and production cost.
Unified range	The proposed model ensures unification with our current product portfolio.
Size	The size of the proposed product will be almost the half of its “parent” and will be able to fit easily in a pocket
Retail price	The final retail price of the pilot will be less than 3EU thus increasing a lot its potential considering that the average price of our current product range is 20EU
Feasibility - Impact	The pilot is ideal for TOYLABS as it will be feasible to develop during a short period of 6-7 months. At the same time it will generate and activate all the necessary needs, attributes and characteristics that is essential to be developed and tested.

Table 4 - Reasons for Selecting the V-Cubes Pilot

The pilot consists of 27 smaller pieces classified in 4 different distinct parts that conform the Rubik’s Cube. For the pilot, this 27 pieces will be conceptualized,

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designed and developed using both the methodology ToyLabs and the different tools available in the ToyLabs Platform. The classification of the pieces is as follows:

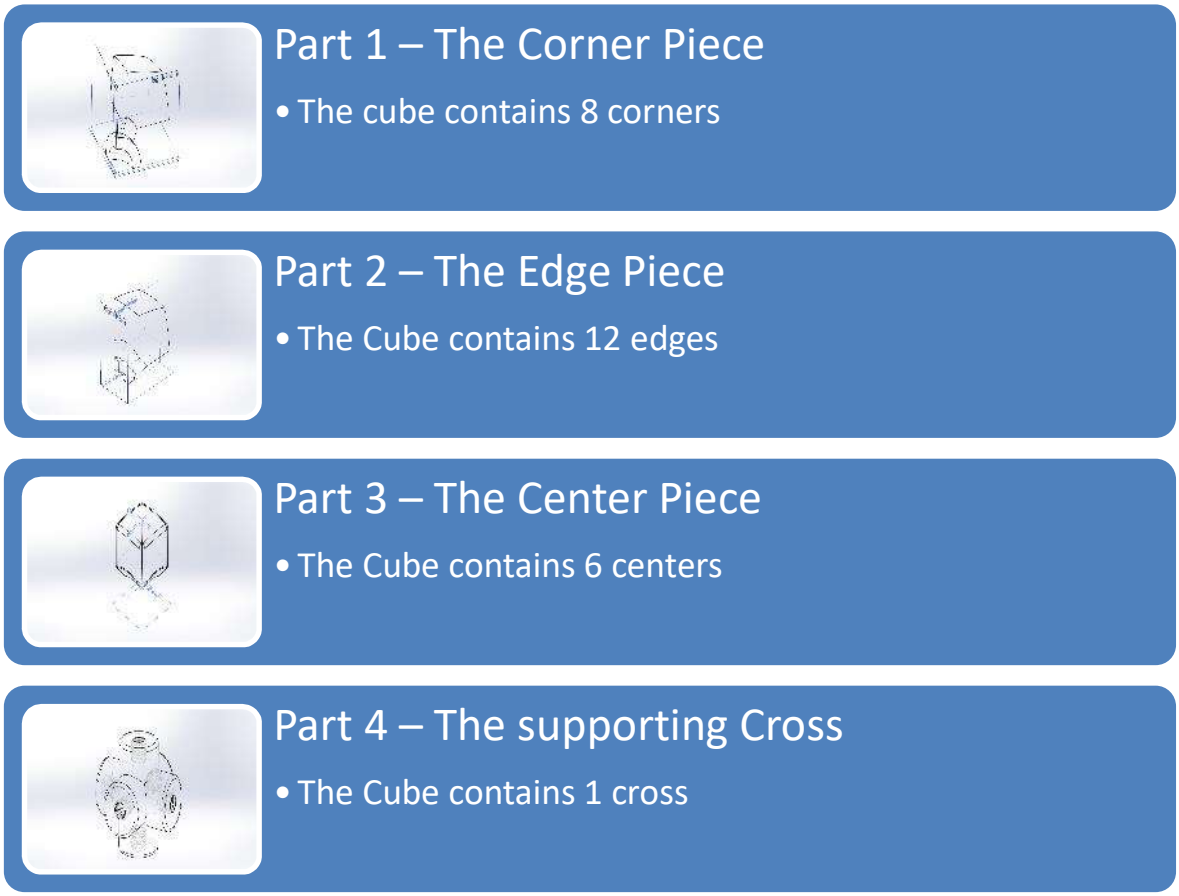

Figure 2 - Parts of the Rubik's Cube

In this pilot, as it will be with the Dolls and accessories Pilot, there are 3 main scenarios, in which the actors involved are: V-Cube Manufacturer, Fablab Lecce and Romania, safety experts (AIJU), and final users. The methodology that is intended to be used is the one proposed throughout the progress of this project.

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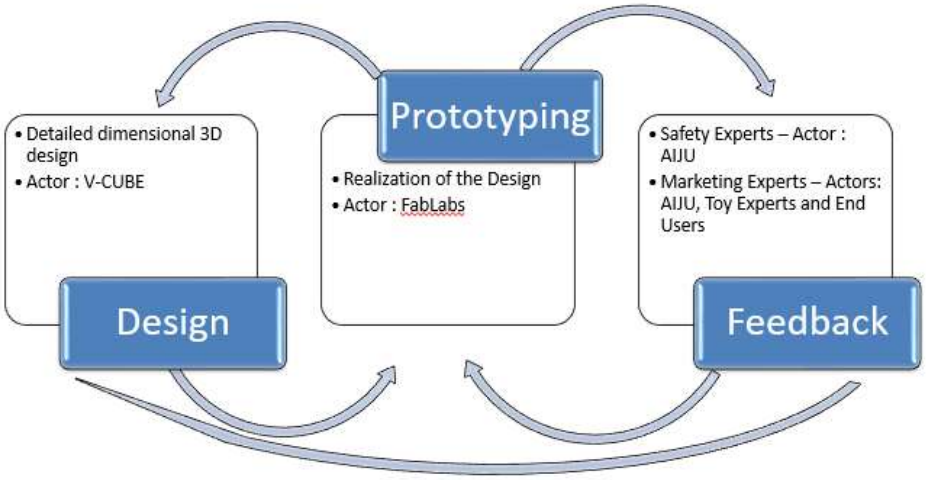

Figure 3 - V-Cubes Pilot process

3.1.2 Dolls and accessories Pilot

Industria Auxiliar Juema is a company with more than 30 years of experience in manufacturing of dolls and their accessories, addressed to little children. Quality and design have a very important role in the process of manufacture, combining advanced production techniques and totally handmade parts. The company products are certified based on the strict safety and quality EU standards. The series of dolls produced branded as 'PAOLA REINA' is distributed to 20 countries and includes a wide range of models from classic collectible dolls to current modern dolls, dolls with mechanisms, educational babies and heads to comb.

Given that Juema products are addressed to ages 2 to 12, it's important for this pilot to explore to the end the capabilities offered by ToyLabs regarding getting feedback from childhood experts and psychologists about the doll designs as well as from toy safety experts since standards for toys addressed to toddlers are very demanding. Currently Juema does not use any additive manufacturing technologies for prototyping, so each new prototype is mainly handmade, requiring extensive work. Regarding feedback collection, Juema does not have an established feedback mechanism but is based on direct customer reports and conventional market research techniques.

The Dolls and Accessories Pilot will mostly demonstrate the innovations introduced by ToyLabs as far as it concerns rapid prototyping, taking advantage of Fablabs manufacturing capabilities, as well as getting feedback and recommendations based on produced prototypes by childhood experts and child-life specialists, as well as by toy safety experts regarding conformance to EU standards. Additionally, Juema is interested for analysing competition and predicting market trends, given that trends in such children toys have relatively short lifecycle, so their early identification is important.

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The most important benefits for Juema out of the pilot application of ToyLabs, can be summarized in the following points:

- Build prototypes of new toys in remote facilities (Fablabs) and get recommendations from childhood professionals, child-life specialists as well as from parents, on the basis of the prototypes. Advices on localising the models or any accessories are also of great importance.
- Get safety-related recommendations from toy safety experts during the early phases of the creation process of new doll/accessories models.
- Analyse the market in the countries that Juema products are distributed and get insights regarding current and future trends.
- Validate the ToyLabs open innovation process and take advantage of the ToyLabs community in designing and promoting new models, as well as for entering new markets or market segments.

3.1.3 STEP-BY-STEP WP5 ToyLabs Piloting and Evaluation Sheet

In order to determine each of the steps that must be carried out for the successful completion of the two pilot tests, from AIJU (coordinators and developers of D5.1 "Pilot Readiness Documentation") a sheet was elaborated in which it was specified, step by step, how to carry out the pilot tests and how to evaluate the process. The sheet is the following:

STEP-BY-STEP WP5 TOYLABS PILOTING AND EVALUATION

REGISTRATION ON THE PLATFORM

- Register on the ToyLabs platform: https://platform.toylabs.eu/
- Enter the company information on the platform
  - Description
  - Contact
  - Competences
  - Certificates

CONCEPTUALISATION PHASE

- Start the process of creating a new product in the section "Dashboard" -> "New product".
  - Title
  - Description
  - Category
  - Age to which it is addressed
  - Legal aspects
  - Pictures (concept pictures, etc.)
  - Attach documents (if necessary)
- To carry out the process of creating a new product, use the tool "ToyLabs Social Analytics & Market Trends Analysis tool"

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- Once the new concept has been published, it will receive feedback from both end users and security experts, teachers, etc.
- To conclude this part of the development of the new product (conceptualisation), the following survey should be completed by the manufacturer: https://docs.google.com/forms/d/e/1FAIpQLSd2XcKoYOdksP_kQIgF_RFFhjxyACawtHj67RptIFXgUgFPbQ/viewform?usp=sf_link
  The purpose of the survey is to evaluate the operation of the ToyLabs platform. The more information that is received, the more improvements can be applied.

DESIGN PHASE

- Once the final concept has been obtained, ask the participating Fablabs in the ToyLabs for collaboration to design the product. Seeking to establish a collaboration for, in the development phase, create a prototype. Send request for a Fablab.
  - Select the one that best suits your needs.
  - Sign the confidentiality agreement.
- Begin with the design of the product
  - Use the “AR Engine Tool”
  - Conduct a cost and feasibility study.
- Participation of security experts enrolled in the ToyLabs.
- End-users feedback.
- Obtaining the final design.

  To conclude this part of the development of the new product (design), the following survey should be completed by the manufacturer: https://docs.google.com/forms/d/e/1FAIpQLSdG1GufkCVeP2EG6xfrcBM-E0mloXYeGPGsKTX_nbrRH0e4vg/viewform?usp=sf_link
  The purpose of the survey is to evaluate the operation of the ToyLabs platform. The more information that is received, the more improvements can be applied.

DEVELOPMENT PHASE

- Once the final design has been obtained, the next objective is to develop a prototype.
  - Collaboration between Manufacturer and Fablab.
  - Use of the “AR Engine Tool”
- Once you have a first prototype (virtual), validation of security experts.
- Take into account the opinions of the first prototype (virtual) of the final users (parents, children and schools) through the "end-user web interface".
- Creation of the first real prototype.
  - The Fablab will develop the prototype devised with and for the company.
- Test of the prototype by end-users and security experts (if necessary).
  - Use of the "end user interface": the final users registered in the platform will contribute opinions of the prototype developed through the web, viewing the images and the videos about this uploaded to the platform.

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- Use of the "partner matching tool": with this tool it will be possible to arrange a meeting with end users and security experts to test the prototype. Apply the necessary improvements.

- Develop a final prototype.
- To conclude this part of the development of the new product (development), the following survey should be completed by the company: https://docs.google.com/forms/d/e/1FAIpQLSf4F5O13oUGTkd9z3fZu6MeHjkZoYDiNizU_IYcfb3sz7uTBA/viewform?usp=sf_link
  The purpose of the questionnaire is to evaluate the operation of the ToyLabs platform. The more information that is received, the more improvements can be applied.

Figure 4 - ToyLabs Piloting and Evaluation's Sheet

3.2 TIMING OF THE PILOTING

In the Proposal Submission Form of the ToyLabs project a schedule was established in which the duration of the pilots was included, through Working Package 5. The beginning of WP 5 was established for month 7, with the preparation of the documentation and materials necessary for the execution of the pilots. It is in month 10 when the pilots are implemented and the testing of the ToyLabs methodology and platform begins. The pilots are proposed with a duration of 9 months, until the conclusion of the project.

In the deliverable 5.1 "Pilots readiness documentation" a specific chronogram was established for the execution of the pilots. This chronogram was divided according to the three phases of development of a new product proposed for the pilot tests: conceptualisation, design, and development.

	M07	M08	M09	M10	M11	M12	M13	M14	M15	M16	M17	M18
Pilots												
Conceptualization												
- Log in and new project												
- Study of market situation												
- Obtain of final concept												
Design												
- First product design idea												
- Design improvements												
- Obtain final design												
Development												
- First VR prototype												
- Prototipation and feedback												
- Obtain of final prototype												
Tracking and coordination activities												
Evaluation Process												
Deliverable D.5.2.												
Deliverable D.5.3.												

Figure 5 – Proposed Piloting GANTT chart in D5.1

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Although, the pilots are running according to the parameters established in D5.1 "Pilots Readiness Documentation"; the schedule has been slightly altered due to the following causes:

- The development of the different modules of the ToyLabs Platform has been delayed due to technical difficulties for the implementation of VR technology.
- The consortium had issues with the registration process since it was impossible to create a new account. This problem took some days to be solved.
- The previous synchronisation and management activities within all partners took longer than expected, delaying the beginning of the piloting.

Despite these 3 main issues, the timeline was rescheduled, according to the new situation. In order to speed up the pilots, and thanks to the rapid solution and implementation of the tools of the ToyLabs platform, it was decided to de-standardize, in part, the process of execution of the pilots. Taking this into account, toy factories and FabLabs were given more freedom to advance in the process of creating their new products; streamlining each of the three main phases of the pilots. This allowed the consortium to achieve an appropriate piloting progress and the fulfilment of general deadlines. Following, it is shown the rescheduled timeline:

	M07	M08	M09	M10	M11	M12	M13	M14	M15	M16	M17	M18
Critical errors management												
Pilots												
1. Registration												
2. Conceptualization Phase												
2.1. Use of "Toylabs Social Analytics & Market Trends Analysis Tool"												
2.2. Conceptualization Phase Evaluation												
3. Design Phase												
3.1. Use of "Partner Matching & Selection Mechanism"												
3.2. Design with "AR Engine Tool"												
3.3. Design Phase Evaluation												
4. Development Phase												
4.1. Prtototype with "AR Engine Tool"												
4.2. Development Phase Evaluation												
5. Final Evaluation												
Tracking and coordination activities												

Figure 6 - Final Piloting GANTT chart

As can be observed in the chronogram, the achievement of the pilots has been made more flexible by increasing the number of months of dedication to each phase. For this, the tasks of the different phases of the pilots' execution (conceptualisation, design and development) have been superimposed. This schedule was prepared according to the tasks specified in Figure 2 - ToyLabs Piloting and Evaluation's Sheet.

3.3 PILOT KPIS AND EXPECTED BENEFITS

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The following table summarizes the KPIs and the expected benefits of both piloting activities:

#	Performance Indicator	Description	Related Stakeholders	Quantification
1	Time-to-market	Lead time between the idea of the new product and the date of commercialization to the customer	Manufacturer	50% reduction
1.1	Market analysis time	Time it takes to perform a market analysis for a specific concept/idea using the platform's functionalities	Manufacturer	20-40% reduction
1.2	Time to design new product	Lead time between the start of the Design stage and the date of completion	Manufacturer	5-10% reduction
1.3	Time to construct the prototype	Lead time between the start of the Prototyping stage and the date of completion	Manufacturer	5-15% reduction
1.4	Time to find a collaborator	Lead time between a member of the platform realizing he has need of a partner and him finding the right partner	Manufacturer, FabLabs, Experts	10-30% reduction
1.5	Inquiry/feedback response time	Lead time between a partner asking for an inquiry/feedback and the response by the partner to whom the inquiry was intended	Manufacturer, FabLabs, Experts	Around 30% reduction
1.6	Time for data exchange	Time it takes for a partner to download/receive the necessary data for a specific project	Manufacturer, FabLabs, Experts	Around 30% reduction

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1.7	Number of iterations in the quoting process	Number of cycles between the stakeholders to achieve the final version of the quotation	Manufacturer, FabLabs, Experts	Increased by 1-3
2	Cost for new product development	Cost for the entire process of new product development	Manufacturer	10-20% reduction
2.1	Market Analysis cost	Cost for performing market analysis	Manufacturer	100% reduction (free)
2.2	Design cost	Cost for designing a new product	Manufacturer	5-10% reduction
2.3	Prototype cost	Cost for constructing the prototype	Manufacturer	10-20% reduction
2.4	Operation margin	Reduction in the cost of the project management, by allowing remote participation	Manufacturer	5-10% reduction
3	Quality of the entire process	Overall quality of the final product and its intermediary stages	Manufacturer, FabLabs, Experts, End-Users	5-10% quality improvement
3.1	Number of issues	Number of issues/problems that appear throughout the whole process	Manufacturer	20-30% reduction
3.2	Average rating of the ToyLabs Platform	Average rating of the platform that is carried out through the platform's rating system	Manufacturer, FabLabs, Experts, End-Users	3-4/5
3.3	FabLabs Quality of Service	Mean rating of FabLabs that participate in the platform	FabLabs	3-4/5
3.4	Experts Quality of Service	Mean rating of experts that participate in the platform	Experts	3-4/5

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4	Safety Levels	Number of safety standards performed on the design/ prototype/ product	Manufacturer	All of them (is this possible?) If it is not then at least 90% of them
5	Level of participation of stakeholders (apart from the manufacturer)	Mean number of partners participating in new product development process	Manufacturer, FabLabs, Experts, End-Users	3-6
5.1	Number of ideas	Number of ideas posted by customers for new products/product	End Users	5-10
5.2	Number of comments on toys	Number of comments when a manufacturer turns the visibility of a product on and asks for feedback	Manufacturer	>30
5.3	Number of stakeholders answering a request	Number of people/organisations that answer a manufacturer's call for collaboration	Manufacturer, FabLabs, Experts	5-10 (depending on the request)
5.4	Number of new collaborations	Number of clients that a FabLab/expert receives through the platform	FabLab, Experts	20-30% increase (relative to current collaborations)
5.5	Number of services by partner	Number of services performed by a partner throughout a product development process	Manufacturer, FabLabs, Experts	2-5 (depending on the partner)

Table 5 - Pilot KPIs

3.4 MECHANICAL PUZZLE TOYS PILOT

3.4.1 Execution of the Conceptualisation phase

The idea of V-CUBES was to create a keychain puzzle game, giving the opportunity to play everywhere and in any moment. For doing this, it has been

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necessary to reduce the dimension of the toy but leaving unvaried the tolerances that achieve to the mechanism to work correctly. The puzzle game is made of 8 corner parts with 3 faces, 12 edge parts with 2 faces and one central part with and hole and a cover, that is fixed to the central cross, by one screw for each.

3.4.2 Execution of the Design phase

V-CUBES has shared the original 3D model of the puzzle game with the FabLab. Here the model has been analysed and converted to a format available for

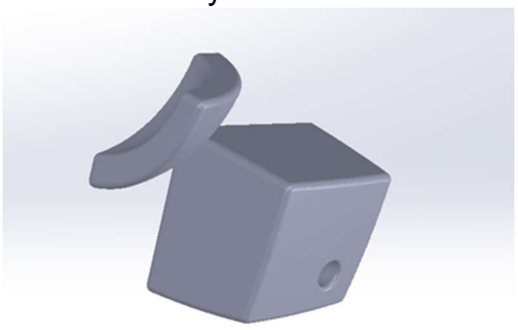

Image 12 - Corner 3D model

3d printing software. After that, the design has been adapted for the 3d printing and a simulation of the realisation of the prototype has been simulated.

3.4.3 Execution of the Development phase

Once that the model has been optimized and checked, the file has been printed through a SLA 3D Printer (FormLabs – Form 2). It has been chosen this technology because it guarantees a good tolerance (up to 0.025 mm), based on the dimension of the parts (around a cube of 1 cm for each).

Image 13 - Printing simulation of a whole puzzle game

After the time for printing, that is about 6 hours, it is necessary to cure the resins with a UV hoven for a period of around one hour @60°C. Once that the product is solidified, the rigid supports have been removed, and the parts are cleaned by the use of sandpaper, for removing the little imperfection due to the contact of the supports with the parts. This activity is important for guarantee the correct roughness necessary for the sliding between the parts.

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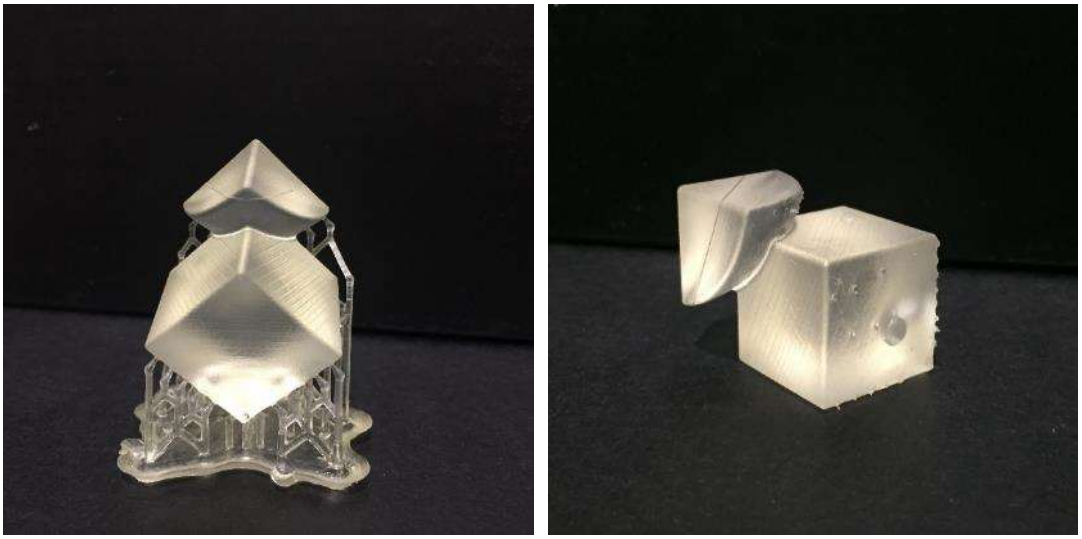

Image 14 - Part as printed and after the support removing

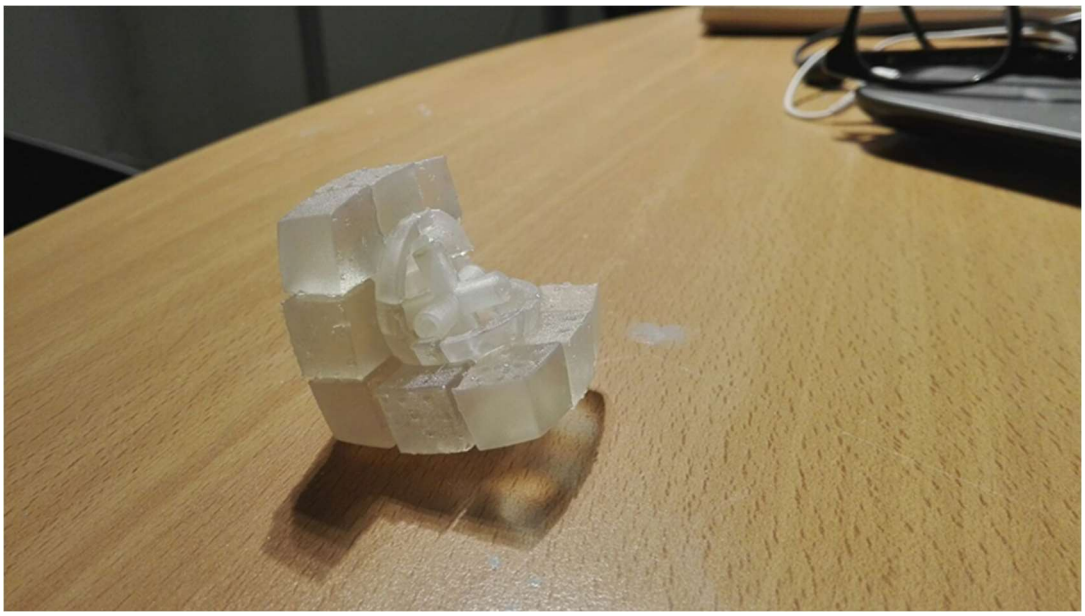

Image 15 - Semi-assembled prototype

Once completed, the cube has been assembled and some videos and pictures have been shared between Fablab and V-CUBES and a final product has been sent to the toy manufacturer to check the result of the activities.

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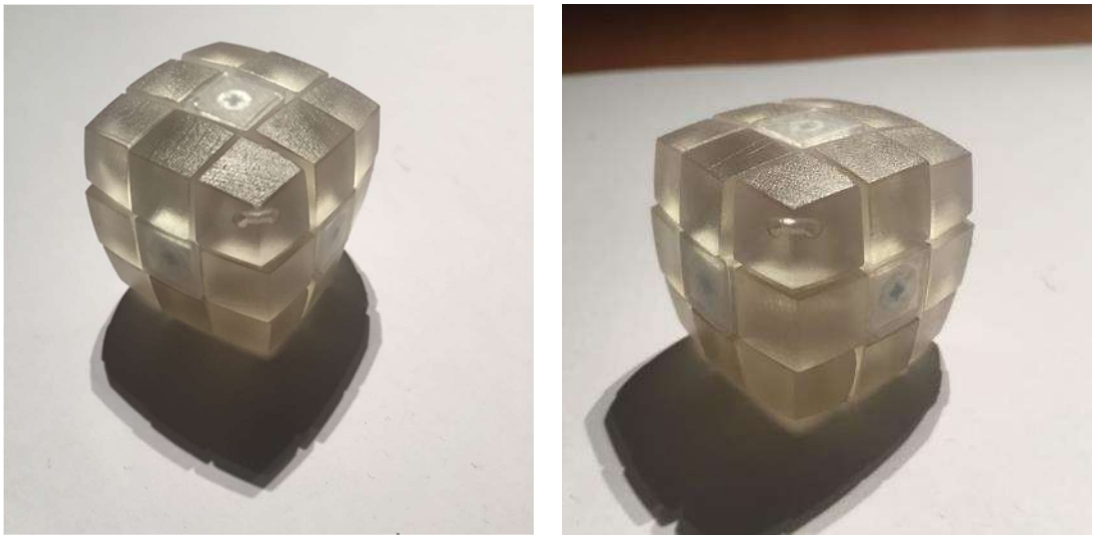

Image 16 - Puzzle game prototype

3.4.4 Feedback

Once V-CUBES receives the prototype, it gets tested. It has been evaluated as a good result, also if it could be improved, in particular about the shape and the tolerance of the small parts obtained once that the dimensions have been reduced. Thanks to the prototype, V-CUBES can now re-design the 3D model using additive manufacturing and the injection moulding technology.

3.5 DOLLS & ACCESSORIES PILOT

3.5.1 Execution of the Conceptualization phase

As a dolls manufacturer, Juema needs to create moulds for each product it wants to produce. Before ToyLabs, the realisation of a doll was made by an artisan, who created the prototype manually. Although handcraftsmanship can be accurate, the tolerance of the parts produced (as legs, neck, or arm joints) don't allow perfect fits, at least not as well as when using some mechanical technology (as 3D printing or CNC machines). Another problem is that when the doll should be scaled, keeping the same proportion and shape (i.e. the face characteristics or the body proportion) is very challenging. In this context, new technology can contribute drastically to improve the production process.

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Image 17 - Original painting mask for dolls

3.5.2 Execution of the Design phase

The first need of Juema has been to resize the dimension of the head of a little doll, in the way to be fixed to a body of a biggest one. For accomplishing this goal, the use of the 3d scanner technology has been very important, because it gives the ability to transform the artisan's work into a digital model. In fact, once Juema sends the small head and the big body to the Fablab, thanks to the 3D scanner, it is relatively easy to create the 3D model of the parts.

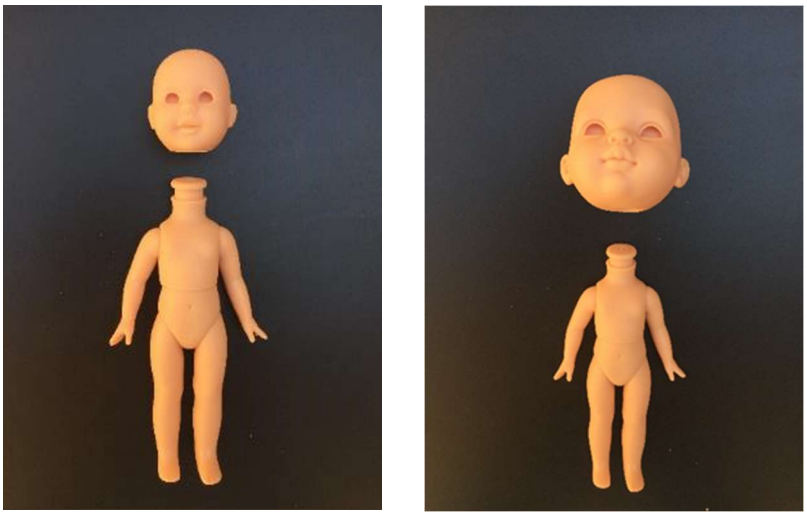

Image 18 - Big and small body

When editing the 3D model, the head joint has been adapted to the bigger body, so that it fits exactly.

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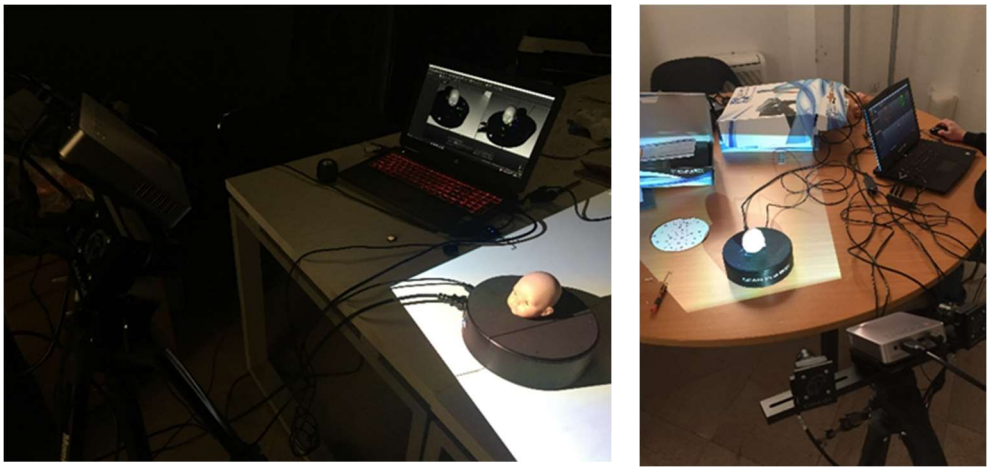

Image 19 - Head scanning

Another process developed has been to recreate the model of the body of a doll, changing some proportions of some parts of the body. After a 3D scanning, the 3D model is modified, adapting the new shape, based on the indications provided from Juema.

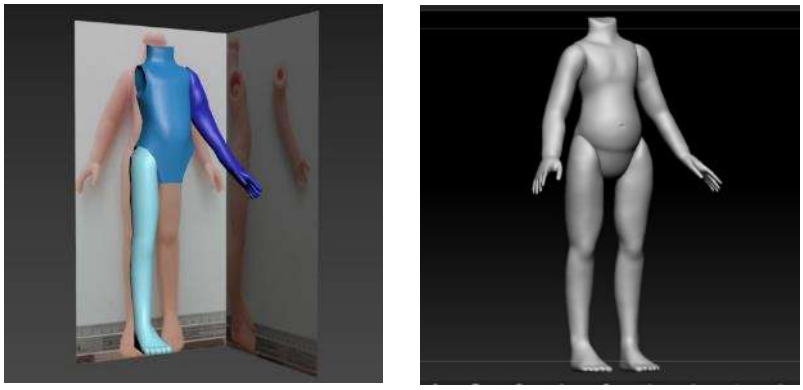

Image 20 - Doll body modification

Once the body has been created, other adjustments can be made, not only for prototypes, but also to support production. One example of this is the masks fitted to the body or head of the doll to act as a stencil for painting.

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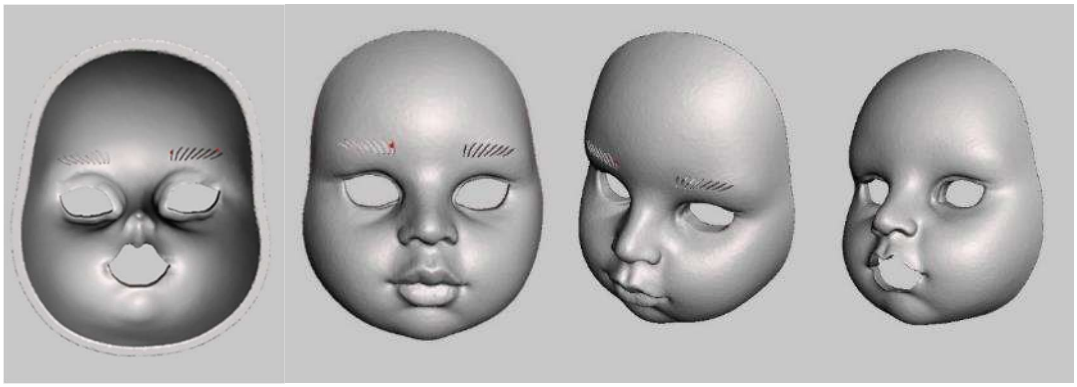

Image 21 - Mask 3D model

Thanks to the accuracy of the scan of the doll's face, it has been easy to produce a mask that would fit almost perfectly (with an error of 0,5 mm) to the product that is to be painted.

3.5.3 Execution of the Development phase

The doll parts have been printed with different additive manufacturing technologies (FDM and SLA) and using different materials (in particular rigid or solid). At the end of the process, some pictures had been sent to Juema trough the platform, and the new head had been shipped.

All the parts of the body have been modified and printed separately in rigid and rubbery material. After the parts were built, they were sent to JUEMA to perform checks.

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3.5.4 Feedback

After checking the file, JUEMA provided some feedback on the dimensions and shape of the model produced. Based on it, the FabLabs modified the models and printed them again. JUEMA found a solution to the issues that rose from the use of specific materials for the prototype, and gave positive feedback.

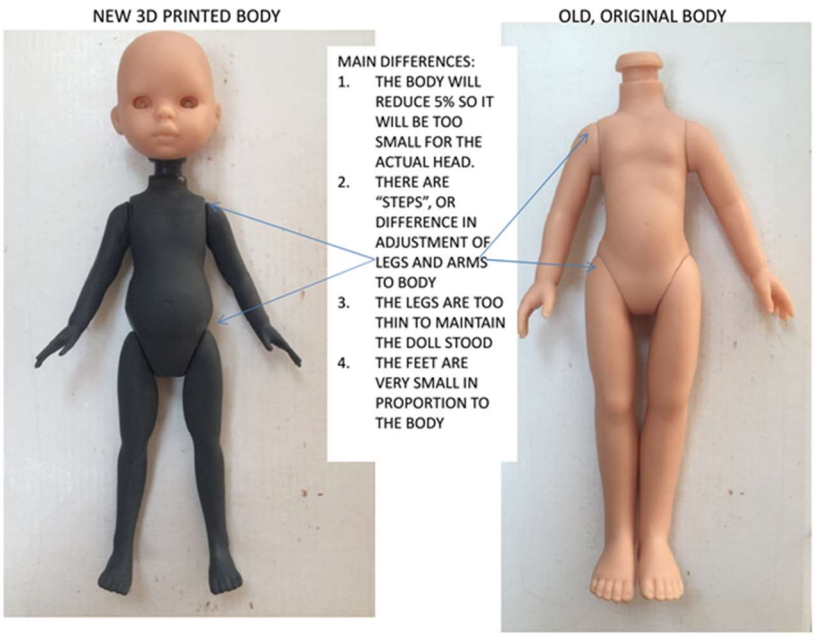

Image 22 - Comparison of the two doll bodies

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4 PILOTS EXECUTION AND PLATFORM OPERATION FIRST REPORT

4.1 PILOTS EXECUTION TRACKING, STRENGTHS AND WEAKNESSES

In this section an overall evaluation of the platform operation and the piloting execution is performed. With this objective, the following table sums up the main aspects of the methodology and platform that are either already successful or that need further improvement.

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Strengths and Weaknesses		
Platform Operation	Strenghts	• Multiple options for log-in. It is possible sign-up with an e-mail or by using Facebook or Google accounts. • Easy to use: the graphic user interface is intuitive and optimised. The clear colours identify the different bottoms and they allow to locate and recognise the available actions that can be performed inside the platform. • Cross-device compatibility and adaptive design. Access to the platform is easy and could be done from any device: smartphones, tablets or computer. The pages adapt automatically, giving to the user the correct experience for the platform. • Most common file extensions are accepted and implemented in the platform, specifically, JPEG for pictures and STL for the 3D printable models. • Uploading files. It easy to upload file in the platform with drag & drop operations. • Creating a new product and sharing it with a partner is easy. In just a few minutes a user can create a new product and all the information needed to start sharing it becomes available. • Thanks to the member page it will be simple keep in touch with all the partners of the several projects. • In all the phases of a project comments can be added to share the different ideas and/or the feedback on a particular product. • The market analysis is a relatively easy to use tool allows for a better understanding of the current state of the market and its potential reaction to the new product. • The dashboard is a clear synthesis of the progress of each project. Thanks to the “green check icon” it is easy understand which phases are complete and which ones are pending. Following each phase step by step makes it easier to follow the project’s progress. • Clear way of displaying the members of the platform and what they do (toymaker, expert...) • Clear display of projects on users’ dashboard • Easy to upload files with a lot of extensions

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	Weaknesses	• Up to this date, some components are not completed yet. The "About" screen is missing information. • A comprehensive help file hasn't been created yet. • The members section can be improved. Options for sorting users by name, expertise, date of registration, etc. When choosing an organisation, the platform should show the members of the organisation and add the ability to contact them directly. • Sometimes some images are deformed when uploaded (only in the preview phase). • It isn't very clear how to register as an organisation if not instructed by a tutorial before entering the platform. • A thumbnail with a picture in front of each project on the dashboard would improve the clarity of the interface. • There is no way to forward emails from the platform to another email address or to get e-mail notifications.
Piloting execution	Strenghts	• There is good communication between partners. All the partners have been close and focused on the correct execution of the project. Thanks to the useful feedback and the explanations provided, it has been possible to achieve the correct realisation of the workflow up to the generation of the prototypes. • Everyone has contributed to develop the platform. • Every profile of users of the platform is represented by at least one of the members of the consortium. • Efficiency when solving bugs. • The piloting activities are being carried out reasonably well thanks to the detailed specification of each step. • Incorporating heterogenous expertise and technologies has been positive, because it allowed for a new product development process that would have been impossible if only one organisation was realising it. • All the members of the consortium have a profile in the platform and are using it to communicate. • Efficiency when solving bugs, all problems regarding uploads have been addressed • Pilot activities have passed the "getting to know each other" phase and advanced to the prototyping phase • Access to a variety of technologies led to different prototyping solutions

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	Weaknesses	• The time available for piloting is enough for functional testing, but there isn't enough time in the project to measure the platform's designs' performance in the market. • The learning curve for using the platform and the amount of pilot products created is only enough for crude estimations of the methodology's effectiveness. • There are two main pilots with which the platform can be fully tested but with more minor projects ongoing it would be a richer analysis. But, because the process of developing these two pilots is time-consuming, smaller projects uploaded to the platform will be hard to implement all the way.

Table 6 - Strengths and Weaknesses

4.2 PLATFORM OPERATION, MAIN BUGS AND OTHER IMPROVEMENTS

In this section of the deliverable, the main bugs detected in the platform until this date are detailed. Most of them have been remedied.

Increase the maximum size of the uploaded files to the platform.

During the piloting, different stakeholders, FabLabs and Manufacturers, had to interchange documents regarding the 3D modelling, pictures and text documents for the collaboration in the process of creating a new product.

The ToyLabs platform allows attachments to messages between users. The limit is 8 files.

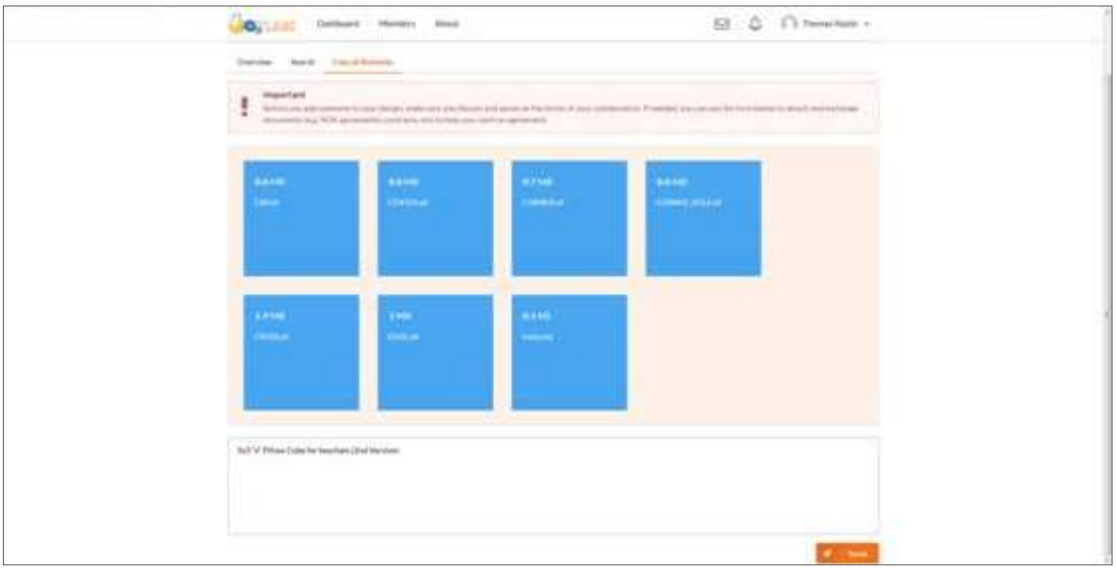

Image 23 - Documents attached to the platform

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While making use of this tool, Fablab Romania detected that the maximum size was 2mb per file. This size was insufficient for uploading heavy files of 3D modelling, pictures or other type of files.

Therefore, it was reported to SINGULAR LOGIC, who solved the problem by increasing the maximum size of files to 32mb.

Error when creating an organisation with final user account

One of the first steps of the piloting, was to sign in to the platform and create an organisation profile.

When the users registered on the platform, they tried to create the organisations they represented. This was impossible due to an error when pressing the Validation button:

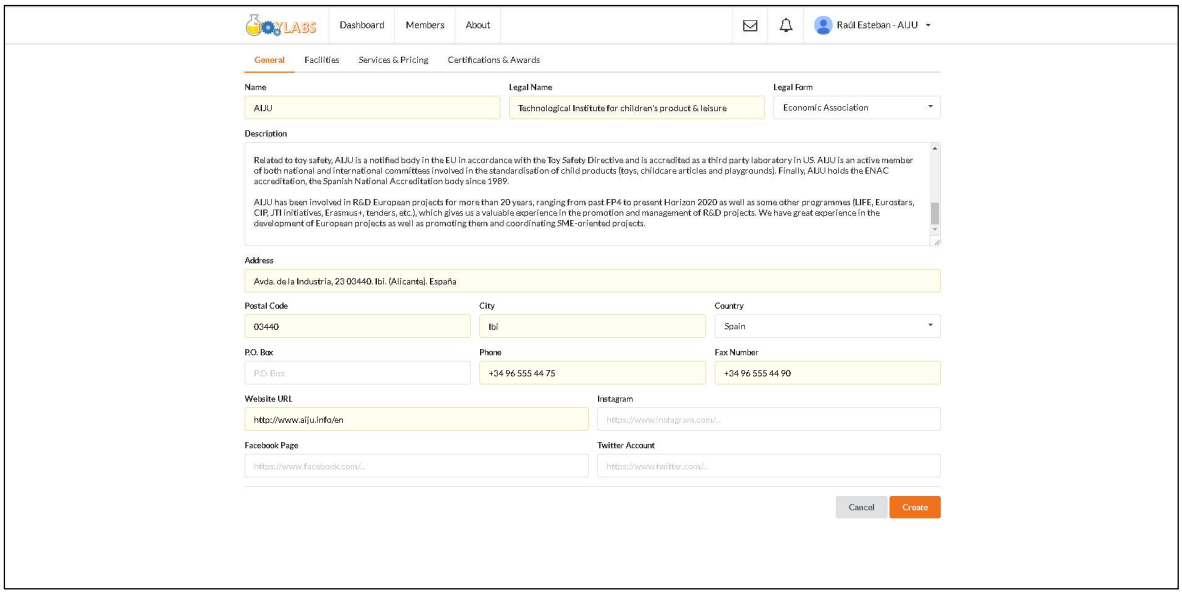

Image 24 - Creation of the organisation profile

Once this bug was detected, AIJU contacted SINGULAR LOGIC to inform them of the situation. After analysing the bug, SINGULAR LOGIC detected that the problem was based on the type of user with whom the personal account had been created. On the platform users can register as: safety expert, manufacturer, FabLab and end user. The users who register as end users should not have the ability to create organisations, since these users are parents and end users of the products and not members of any organisation related to toys development. The option to create an organisation was shown to the end users and, when the "create" button was pressed, an error appeared:

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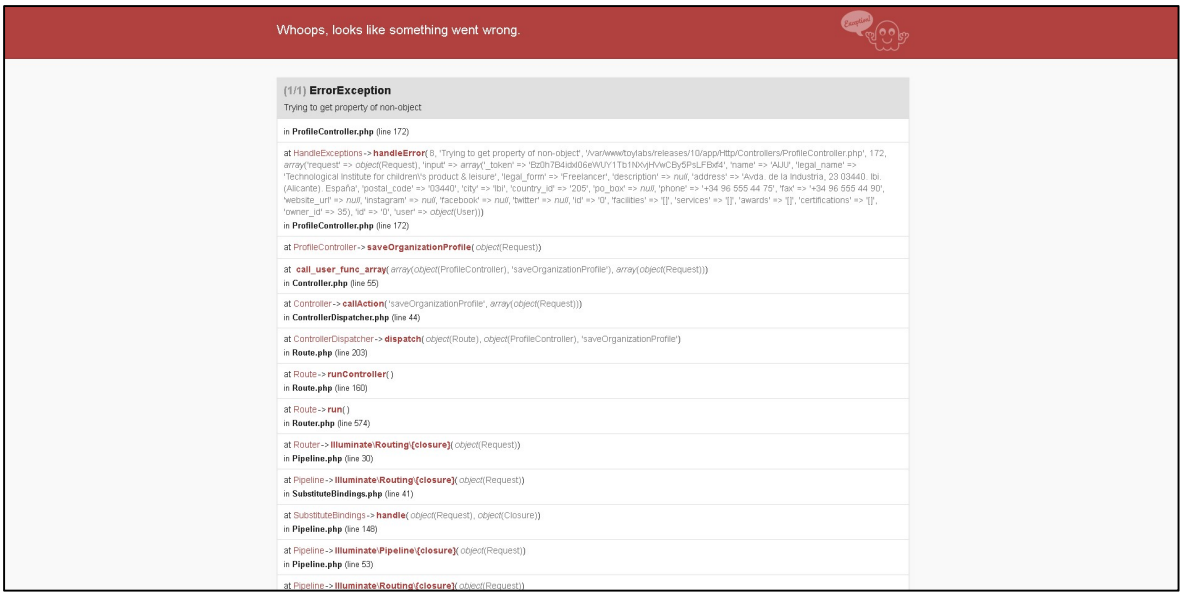

Image 25 - Error when creating the organisation profile

When checking the type of user of the people who had tried to register their organisation, SINGULAR LOGIC realized that all of them were registered as end users.

To correct the problem, the user type was specified for each person and the option to create the organisation on the platform was blocked to those people who registered as end users.

5 END-PILOTS PERSPECTIVE

In general terms, the evolution of the pilots to date has been carried out correctly. Once the first version of the platform was obtained, the different members of the project consortium created their users and began with the conceptualisation tasks. The evolution of the pilots has been carried out as stipulated in the "step-by-step sheet" for the achievement of the pilot tests.

The evolution of the pilots to date is characterised by a small adaptation of the times due to technical difficulties in the development of two of the three main tools of the platform: "Partner Matching & Selection Mechanism" and "Augmented Reality Engine".

In both pilots conceptualisation tasks have been performed for new products, through the completion of the brief description of the product and the upload of several images. Tests were carried out in the sending of messages and likes in each product and the tool "Social Analytics & Market Trends Analysis" was tested with both pilots, in order to focus the concept towards a specific design that adapts to the needs of the market. Next, the pilots evolved until the design phase, with which the

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first designs of the products were obtained. These designs were, in the case of the pilot of V-CUBES, each of the pieces that would make up his new puzzle cube and, in the case of JUEMA, the different pieces (head, torso, legs and arms) that make up the doll which is intended to develop. Within the platform, in the design section, 3D designs and private feedback from the FabLabs involved in obtaining the product were incorporated.

Currently, the pilots are in the prototyping phase. Both prototypes have already been developed through the VR design tool and through printing on 3D printers. Moreover, the first versions of the physical prototype have been elaborated.

Making a global assessment, the pilots are advancing according to plan. The remaining tasks are focused on perfecting the physical prototypes and evaluation by both end users and safety experts of these prototypes. To this end, these profiles will be incorporated into the system: the role of security experts will be adopted by AIJU, due to its long career in the evaluation of toys; while for the role of end users, the collaboration of several schools has been agreed, so that teachers, pedagogues, etc. can register on the platform and actively participate with opinions and suggestions about the prototypes. Moreover, an analysis of the information obtained with the Platform and the questionnaires will be done, in order to verify an improvement in the time and money efficiency of the ToyLabs Methodology.

The objective initially planned for the pilots is the elaboration of a final prototype, following the steps proposed in the ToyLabs methodology and making use of the multiple tools included in the platform. The good progress rate of the pilots shows us that it will be possible to reach the finalisation of the pilots according to the proposed timing, unless there is a serious setback.

6 CONCLUSION

This deliverable reports on the evolution of the incorporation of the improved versions of the platform's tools, as well as the beginning and progress of the pilots. It has been verified that the platform is fully functional, and it receives constant updates and improvements in the features and the tools. Up to 26 unique users have made use of the platform, to check its operation and inform SINGULARLOGIC, who is responsible for the creation and maintenance of the platform, of the errors that have arisen, most of them easy to solve.

Regarding the pilots, after a small delay in the beginning due to technical difficulties with the platform and the evaluation plan, they began normally. The team, during all the processes of the piloting, is having in mind its main objectives:

- Collect and evaluate results to constantly optimise both what the ToyLabs methodology and the platform offer.

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- Evaluate the impact and the measurable added value of the methodology and platform against the objectives of the approach.
- Identify the lessons learned during the test phase to be used in the future application of the ToyLabs solution.

To ensure that this small delay is not a problem for the fulfilment of the objectives proposed in the pilots, the timing of the different activities of the piloting was slightly reorganised. The tasks were planned again so they could be carried out in parallel, and thus speed up the entire process. This reorganisation is shown in Figure 6.

With both pilots the development phase has been achieved, obtaining the first versions of both the prototypes of Augmented Reality and those created with 3D printers. The different agents involved in the development of these pilots have collaborated actively. It is important to highlight the close collaboration between manufacturers and customers, who have had constant communication and have executed all phases of the pilots in a collaborative manner. In the Mechanical Puzzle Toy Pilot, the first puzzle cube prototype was obtained, printed using SLA 3D Printer technology. Regarding the Dolls & Accessories Pilot, the first prototype has also been printed, using multiple technologies of additive manufacturing (FDM and SLA) and using different materials (in particular, rigid or solid).

The next deliverable of WP5 is D.5.3. in which an updated report will be made on the status of the pilots and the results of the evaluation that was planned in D5.1 will also be included. It is being carried out using different tools: 1) through automatic quantitative information collection systems incorporated in the platform and 2) through 4 different sheets in which qualitative information on the operation of the platform and the progress of the pilots is collected.

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