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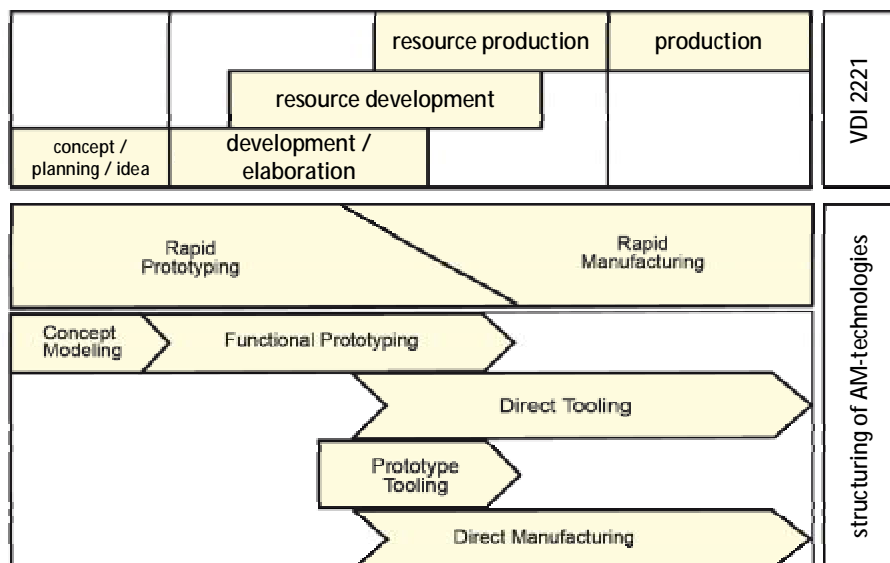
## Additive manufacturing applied to toys & games customisation

The customer demand in the toys and games market is increasingly asking for personalised products that meet a variety of tastes and preferences. Mass customisation, or the process to provide many customers with individualised products, needs to be backed up by flexible manufacturing systems.

Three customisation scenarios, depending on the batch size, can be considered for personalised products: a batch size of one product, a small batch size or a combination of mass produced parts.

Additive manufacturing techniques can highly contribute to support toys and games customisation. It is known that these techniques are considered highly suitable for mass customisation and that they allow very fast changes in design. They can be split up rapid prototyping, rapid tooling and rapid manufacturing.

Prototyping is directly related to the product development while Rapid Manufacturing is related to the standard manufacturing production (i.e. Prototype of final parts for testing and validation before starting the production stage). Rapid tooling, instead, is located between the two previous techniques for the production of moulds and/or tools as an indirect manufacturing technique.



Rapid tooling techniques cover the gap between small batch manufacturing by AM and high production runs by casting. It enables low cost semi-batch production of customised parts in a

wider variety of materials. These allow to reduce both, costs and time, beside conventional manufacturing techniques. Although the materials are more limited, they provide lower surface quality and accuracy, but higher freedom in design. In addition, they allow for geometries that are more complex.

In addition, rapid tooling techniques can improve the manufacturing process through conformal cooling channel. They do it especially in intricate shapes where these channels can contour the geometry of the part for reducing cycle times in large production when running of parts, and allowing for the uniform distribution of temperatures.

On the other side, there is one part of additive manufacturing, such as the achieving of custom colours, in which the industry still needs to tackle through research actions, such as the one that IBUS is undertaking.

Furthermore, the toys and games market has high limiting standards. In fact, EU Toy safety standards include some of the most stringent standards found worldwide. Parts made with these technologies must keep the same mechanical, physical and chemical properties as products processed with traditional technologies. There are some techniques that could not be used in the processing of games & toys parts, i.e. FDM, where parts could be subject to delamination and, consequently, result in a broken toy. Compliance to EU Standards for customised toys and games, as well as general production quality compliance, are key aspect that are being researched within the iBUS project.

## Project News and Activities

An important milestone on this section is that the [iBUS website](#) overview has been updated with information targeted to shoppers, designers, retailers and makers. Additionally, a new label on the project results has been enabled. It contains the results on public deliverables, demonstrators, videos, newsletter and publications made within the project. Finally, it has been translated into Spanish and some other languages such as French and the translation into Czech will be available soon.

## Publications/ iBUS in the press

In this section, you will have access to a series of press links on publications and dissemination actions carried out by iBUS project:

- [INNOVATIONS IN TOY INDUSTRY: DESIGN YOUR PLAY](#) (GE)
- [iBUS launches platform for production of custom 3D printed toys](#) (EN)
- [Incrementa la creatividad de los niños a través de la customización basada en la web e Impresión 3D](#) (ES)
- [El proyecto iBUS desarrolla la interfaz de la primera plataforma online para personalizar juguetes](#) (ES)
- [Motor Show Festival Runs an Amazing STEM project for Local Kids](#) (EN)

## Innovations in Toy Industry: Design your Play

The workshop “Innovations in the Toy Industry: Design your play” was held at the DMRC of the Paderborn University on September 19, 2017.

This workshop was held in order to know the desires, requirements and products the project partners SMEs have in relation to the H2020 iBUS project. Its final aim was to join up partners for the H2020 iBUS supply chain.

The event consisted of an interactive session after the presentation of the iBUS project and a session about how to tackle the gap for the additive manufacturing, popularly known as 3D printing, to be viable for industry. Other multidisciplinary subjects such as legal aspects of AM, toy safety and toy customisation and marked needs were treated. The event finished with an interactive session among the participant companies and an actual case study of an industry expert on AM and Rapid tooling. A visit to the DRMC AM facilities was also held.

## Dissemination events attended by iBUS

Partner/s	Event	Type of Activity	Audience Level
Consortium	Innovation in the toy industry: Design your play	Workshop	20
UL – AIJU	AM – Motion: European strategic research on Additive Manufacturing (15/11)	Presentation. Poster	200
AIJU	ADDIT3D (28/05 – 01/06)	Stand - Flyers	652
AIJU	Made From Plastics (30/05 – 01/06)	Stand & Speech	40
AIJU	AMEF 2017 (17/10)	Participation	60
AIJU	AM-MOTION: Experts group (18/10)	Participation	40
AIJU	Foro Innova-T (18-19/10)	Presentation	30

## Upcoming Events

<a href="#">SpielWarenmesse</a> 31 January – 4 February 2018 Nuremberg, Germany		<a href="#">Additive Manufacturing/ 3D printing conference – Inside 3D printing conference</a> 20 – 24 February 2018 Dusseldorf, Germany
<a href="#">Maker Faire Lille</a> 9-10 February 2018 Lille, France		<a href="#">DDMC 2018</a> 14-15 March 2018 Berlin, Germany
<a href="#">Maker Faire Prague</a> 14-15 April 2018 Prague, Czech Republic		<a href="#">Rapid Design Prototyping &amp; Manufacturing – RDPM 2017</a> 27-28 April 2018 Newcastle, U.K.

## Coordinators message

The iBUS project is undertaking research into a growing and challenging area. The iBUS Special Interest Group continues to grow with the addition of potential new partners who will form part of the iBUS Supply and Demand chains.

In order to engage the market, the consortium has created a slogan that captures the spirit of the intended output for the Toy and Games market: “Design your play”. It has captivated all us. We believe this is the best description we could have for the iBUS final results in this market.

Developing the brand name is an ongoing activity with our new Project Partner MOR Digital being tasked with the challenge of developing a Digital Marketing approach for the project platform. The brand and platform will allow playing by do-it-yourself custom-made toys which are driven by (re)designing them using the Internet-based iBUS design Platform. These designs will then be manufactured by using the iBUS supply chain platform through partners with additive manufacturing/3D printing technologies.