DELIVERABLE 7.3
DISSEMINATION AND EXPLOITATION REPORT
“DOIT – Entrepreneurial skills for young social innovators in an open digital world”
A HORIZON 2020 INNOVATION ACTION

Consortium: Salzburg Research Forschungsgesellschaft m.b.H. (AT, co-ordinator), Stichting Waag Society (NL), Lappeenranta University of Technology (FI), Zentrum für Soziale Innovation (AT), mediale pfade.org - Verein für Medienbildung e.V. (DE), eduCentrum (BE), ZAVOD Kersnikova (SI), Polyhedra d.o.o. (RS), Capital of Children A/S (DK), University of Zagreb (HR), Institut d'Arquitectura Avançada de Catalunya (FabLab Barcelona, ES), European Social Entrepreneurship and Innovative Studies Institute (LT), and YouthProAktiv (BE)

Webpage: http://DOIT-Europe.net
Duration: 10/2017-09/2020
Grant: H2020-770063 (Call H2020-SC6-CO-CREATION-2017)

Contact (co-ordinator):
Dr. Sandra Schön
Salzburg Research Forschungsgesellschaft m.b.H.
e-mail: info@DOIT-Europe.net

Disclaimer: This document’s contents are not intended to replace consultation of any applicable legal sources or the necessary advice of a legal expert, where appropriate. All information in this document is provided "as is" and no guarantee or warranty is given that the information is fit for any particular purpose. The user, therefore, uses the information at its sole risk and liability. For the avoidance of all doubts, the European Commission has no liability in respect of this document, which is merely representing the authors' view.
## Description of the Deliverable

<table>
<thead>
<tr>
<th>Overview</th>
<th>Details</th>
</tr>
</thead>
</table>
| Authors                   | Part A: Dissemination Report  
  Gintare Jasiumskaitė, European Social Entrepreneurship and Innovation Studies Institute, Lithuania  
  Simona Simulytė, European Social Entrepreneurship and Innovation Studies Institute, Lithuania  
  Part B: Exploitation Plan:  
  Guntram Geser, Salzburg Research, Austria  
  Veronika Hornung-Prähauer, Salzburg Research, Austria |
| Reviewers                 | Pam de Sterke, Waag Stiftung, Netherlands  
  Frank Vloet, Waag Stiftung, Netherlands  
  Sebastian Mair, Zentrum für soziale Innovation, Austria  
  Sandra Schön, Salzburg Research, Austria |
| Number of Deliverable     | 7.3                                                                                                                                   |
| Title of Deliverable      | Dissemination and Exploitation Report                                                                                                  |
| License                   | CC BY 4.0, see [https://creativecommons.org/licenses/by/4.0/](https://creativecommons.org/licenses/by/4.0/)                          |
| Attribution               | CC BY 4.0 DOIT, [http://DOIT-Europe.net](http://DOIT-Europe.net), H2020-770063                                                          |
| Dissemination Level       | Public                                                                                                                                |
| Contractual delivery date | 2018-12-31                                                                     |
| Actual delivery date      | 2018-12-20                                                                     |
| To be cited as            | Guntram Geser, Veronika Hornung-Prähauer, Gintare Jasiumskaitė & Simona Simulyte (2018, draft). Dissemination and Exploitation Report, deliverable (7.3) of the Horizon 2020 project DOIT, EC grant agreement no 770063, Salzburg, Austria: Salzburg Research. |
Summary

This report consists of two parts: Part A is the dissemination report and Part B the exploitation plan.

Part A: The DOIT project develops, evaluates and disseminates a new approach for social innovation and entrepreneurial education and practices of young people and facilitators such as teachers and makerspace organisers. This report describes the DOIT dissemination activities, products and results generated during the project period 10/2017–11/2018. The main goal of the dissemination activities is to engage the DOIT user and stakeholder communities in the project’s events and online activities. The communities include young people, teachers, makerspace organisers, social innovators and other stakeholders in maker and entrepreneurial education. In the first project period the dissemination work focused on establishing the brand identity and visibility of DOIT and making the project goals and activities known in the communities.

Part B: The DOIT exploitation plan presents a review of the innovation and exploitation potential of different categories of project results, including knowledge/expertise from pilot actions, online services and activities, and various products such as learning material for young people and educators/facilitators. Furthermore the plan presents a preliminary discussion of different options and strategies, which might be used for joint or individual exploitation activities.

The results of the dissemination and exploitation work at the end of the formal project life cycle as well as the plan for further activities will be presented in the final WP7 deliverable (D7.4, September 2020).
# Content

**Summary** 4  
**Content** 5  
**List of abbreviations and terms** 8  
**PART A: The Dissemination Report** 10  
1. **Introduction** 10  
   1.1 Objectives of the deliverable 10  
   1.2 Structure of the deliverable part A 10  
2. **DOIT Communication Approach** 11  
3. **Goals of the Dissemination Report** 11  
   3.1 DOIT’s dissemination objectives 11  
   3.3 Partners’ role and responsibilities 12  
4. **DOIT Communication Tools and Channels** 12  
   4.1 Communication Tools 12  
      4.1.1 Brand Identity and DOIT style documents 12  
      4.1.2 Videos 13  
      4.1.3 Media Articles 13  
      4.1.5 Other Tools 13  
   4.2 Dissemination channels 14  
      4.2.1 DOIT knowledge sharing platform 15  
      4.2.2 Facebook 15  
      4.2.3 YouTube 16  
      4.2.4 Instagram 17  
      4.2.5 Twitter 18  
      4.2.6 LinkedIn / Slidshare 19  
      4.2.7 Medium 20  
      4.2.8 SoundCloud 20  
5. **Analytics of the Report on Dissemination and Communication Activities** 23
### 5.1 Composition of the report

### 5.2 Types of dissemination and communication activities

### 5.3 The total outcome of dissemination and communication activities

#### 7. Next steps

#### Appendix: Responsibilities of Partners

### PART B: DOIT Exploitation Plan

#### 1. Introduction and overview

#### 2. Exploitation principle, USP, and policy drivers

1. Basic exploitation principle
2. USP of the DOIT learning programme
3. Policy drivers for the DOIT approach and programme

#### 3. Exploitable assets of the DOIT innovation action programme

1. The DOIT innovation action programme
2. Overview of exploitable assets
3. DOIT OER exploitation
   1. Literature review
   2. Overview of business models
   3. Summary of key points

#### 4. Market overview and developments

1. Core market segments
2. Makerspaces (outside of schools) with an educational component
3. Emerging makerspaces in schools and related institutions
4. Entrepreneurship Education in EU schools
5. Typical Entrepreneurship Education activities
6. Screening of courses and other formats
   1. National competence centers for EE
   2. International providers of programmes for schools
   3. Programmes for municipal youth and social work
   4. Engagement by foundations, associations and businesses
   5. Screening summary and key points for DOIT partners

---

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1 Composition of the report</td>
<td></td>
</tr>
<tr>
<td>5.2 Types of dissemination and communication activities</td>
<td>23</td>
</tr>
<tr>
<td>5.3 The total outcome of dissemination and communication activities</td>
<td>24</td>
</tr>
<tr>
<td>7. Next steps</td>
<td>48</td>
</tr>
<tr>
<td>Appendix: Responsibilities of Partners</td>
<td>49</td>
</tr>
<tr>
<td>PART B: DOIT Exploitation Plan</td>
<td>51</td>
</tr>
<tr>
<td>1. Introduction and overview</td>
<td>51</td>
</tr>
<tr>
<td>2. Exploitation principle, USP, and policy drivers</td>
<td>53</td>
</tr>
<tr>
<td>2.1 Basic exploitation principle</td>
<td>53</td>
</tr>
<tr>
<td>2.2 USP of the DOIT learning programme</td>
<td>53</td>
</tr>
<tr>
<td>2.3 Policy drivers for the DOIT approach and programme</td>
<td>55</td>
</tr>
<tr>
<td>3. Exploitable assets of the DOIT innovation action programme</td>
<td>56</td>
</tr>
<tr>
<td>3.1 The DOIT innovation action programme</td>
<td>56</td>
</tr>
<tr>
<td>3.2 Overview of exploitable assets</td>
<td>57</td>
</tr>
<tr>
<td>3.2 DOIT OER exploitation</td>
<td>59</td>
</tr>
<tr>
<td>3.2.1 Literature review</td>
<td>60</td>
</tr>
<tr>
<td>3.2.2 Overview of business models</td>
<td>61</td>
</tr>
<tr>
<td>3.2.3 Summary of key points</td>
<td>63</td>
</tr>
<tr>
<td>4. Market overview and developments</td>
<td>64</td>
</tr>
<tr>
<td>4.1 Core market segments</td>
<td>64</td>
</tr>
<tr>
<td>4.2 Makerspaces (outside of schools) with an educational component</td>
<td>64</td>
</tr>
<tr>
<td>4.3 Emerging makerspaces in schools and related institutions</td>
<td>67</td>
</tr>
<tr>
<td>4.4 Entrepreneurship Education in EU schools</td>
<td>69</td>
</tr>
<tr>
<td>4.5 Typical Entrepreneurship Education activities</td>
<td>70</td>
</tr>
<tr>
<td>4.6 Screening of courses and other formats</td>
<td>71</td>
</tr>
<tr>
<td>4.6.1 National competence centers for EE</td>
<td>72</td>
</tr>
<tr>
<td>4.6.2 International providers of programmes for schools</td>
<td>73</td>
</tr>
<tr>
<td>4.6.3 Programmes for municipal youth and social work</td>
<td>74</td>
</tr>
<tr>
<td>4.6.4 Engagement by foundations, associations and businesses</td>
<td>75</td>
</tr>
<tr>
<td>4.6.5 Screening summary and key points for DOIT partners</td>
<td>76</td>
</tr>
</tbody>
</table>
5. Exploitation scenarios 79
   5.1 Makerspace-based learning in education: general scenario 79
   5.2 Makerspaces in DOIT partner countries 79
   5.3 Potential exploitation of assets by project partners 80

6. Towards individual and joint exploitation plans 85
   6.1 Activities in the reporting period 85
   6.2 Next steps 86

References 87
## List of abbreviations and terms

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOOC</td>
<td>Massive open online course</td>
</tr>
<tr>
<td>OER</td>
<td>Open educational resources</td>
</tr>
<tr>
<td>D</td>
<td>Deliverable</td>
</tr>
<tr>
<td>DOIT Events</td>
<td>DOIT events are all public activities during the roll-out phase that highlight the DOIT project and the DOIT learning approaches (these are not DOIT actions)</td>
</tr>
<tr>
<td>DOIT Facilitator</td>
<td>Children and adults who want to organize DOIT (or related) activities - everyone who enables others to learn in a makerspace or social innovation setting, such a library, school, summer camp, etc.</td>
</tr>
<tr>
<td>DOIT Facilitator training</td>
<td>Workshops for (potential) facilitators of DOIT actions</td>
</tr>
<tr>
<td>DOIT Platform</td>
<td>DOIT’s online platform providing materials (toolboxes, success stories, and more) and functionalities (i.e. for sharing ideas)</td>
</tr>
<tr>
<td>DOIT toolbox for children</td>
<td>Toolboxes are the term for the learning material and collection of additional resources DOIT will provide for children (6-10 years, 11-16 years). The material build upon existing material from maker education but require add-ons, for example how to foster entrepreneurial attitudes and social innovation</td>
</tr>
<tr>
<td>DOIT toolbox for facilitators</td>
<td>Toolboxes are the term for the learning material and collection of additional resources DOIT will provide for facilitators. The toolbox includes teaching materials and guidelines on how to organise and provide DOIT actions.</td>
</tr>
<tr>
<td>DOIT success story</td>
<td>DOIT communication material telling true stories of young social innovators</td>
</tr>
<tr>
<td>Makerspace</td>
<td>A makerspace is a physical location which is used as workshop with a variety of tools, including digital tools such as 3D printer or laser cutter, where people work on projects, network, and build. Makerspaces offer collaborative places for innovative forms of production and digital do-it-yourself work. They come in all shapes and sizes and can be found in many places throughout Europe.</td>
</tr>
<tr>
<td>DOIT toolboxes</td>
<td>Toolboxes are the term for the material collection DOIT will provide for children (6-10 years, 11-16 years) as well as facilitators. These materials builds upon existing material from maker education but require add-ons, for example on how to foster social innovation as well as entrepreneurial attitudes.</td>
</tr>
<tr>
<td>Communication</td>
<td>Communication means taking strategic and targeted measures for promoting the action itself and its results to a multitude of audiences, including the media and the public, and possibly engaging in a two-way exchange. The aim is to reach out to society as a whole and in particular to some specific audiences while demonstrating how EU funding contributes to tackling societal challenges.</td>
</tr>
</tbody>
</table>
**Dissemination**

Dissemination is “the act of spreading something, especially information, as far as possible” and follows the three aims: create awareness, create understanding and aim for action. Dissemination is the public disclosure of the results of the project in any medium. Disclosure may sound passive, like a shop opening up, but it is an activity, like a shopkeeper attracting customers. It is a process of promotion and awareness-raising right from the beginning of a project. It makes research results known to various stakeholder groups (like research peers, industry and other commercial actors, professional organisations, policymakers) in a targeted way, to enable them to use the results in their own work. This process must be planned and organised at the beginning of each project, usually in a dissemination plan.

**Exploitation**

Exploitation is the “act of making use of and benefiting from resources and relates to the development or commercialisation of a product or a service”. Exploitation in H2020 terms means the use of results in further research activities other than those covered by the action concerned, or in developing, creating and marketing a product or process, or in creating and providing a service, or in standardisation activities. In that it differs significantly from dissemination activities (see below).
PART A: The Dissemination Report

1 Introduction

The employment of young people and their development into the problem-solvers of the future depends on their entrepreneurial competence, relevant experiences, references and interactions with entrepreneurs (for example, as a source of advice, professional contacts or as role models). For this reason, DOIT seeks to deliver a measurable impact on a set of addressed long-term objectives:

- the creation of a Europe-wide digital social innovation culture,
- higher youth employment
- the creation of new markets and new jobs.

Two DOIT partners will especially secure this entrepreneurial spirit in the project in relation to impact and will attract relevant networks (especially ESI and YPA). DOIT plans a set of activities that aim to

- reach a broad public as well as the media (WP5 roll-out, WP7 dissemination),
- promote access to its open-licensed learning resources (WP2, WP3, WP5),
- foster and showcase positive cooperation between children, entrepreneurs and enterprises, for example within makerspaces or through the DOIT competition.

1.1 Objectives of the deliverable

DOIT consortium adapted multiple dissemination channels and approaches for reporting the projects concepts and results beyond the Project. This included oral and presentation in various events attended by the key stakeholders identified by the Project. Also, using the web and social media channels for instant and more frequent disseminations, as well as, sharing knowledge with research community through contributions to scientific publishing and conference venues.

The presented deliverable will provide the information about the tools and channels that are used to communicate with each stakeholder group and to share the necessary information about DOIT activities. Also, a detailed information about the dissemination of various DOIT activities that were carried out by different project partners and, lastly, the exploitation of these activities which should raise the understanding of exploit DOIT results and how to make an impact.

1.2 Structure of the deliverable part A

This deliverable Part A is divided into 8 main sections and appendix section at the end of the document. These sections are structured as follows:

1. Introduction
2. DOIT communication approach: Here is defined the aim of DOIT project.
3. **Goals of the dissemination and exploitation report**: This section includes dissemination and exploitation objectives, the timeframe for WP7 activities, responsibilities and roles of all partners (this material is provided in Appendix B).

4. **DOIT communication tools and channels**: This section is divided into two parts: one of them provides information about communication tools, such as brand identity, electronic newsletters, videos, media articles, etc. Another part is for defining every communication channel, including social media (Facebook, Instagram, YouTube, Twitter, etc.). Here all descriptions and screenshots are also given.

5. **Analytics of DOIT dissemination and communication activities report**: The main idea of this section is to highlight and discuss about the results of different partners contribution the dissemination of DOIT activities by carrying out various events, workshops or communicating online

6. **Challenges and next steps**

   *Appendix section*

---

**2. DOIT Communication Approach**

The DOIT mission statement is the core of the communication approach:

> The aim of DOIT is to empower girls and boys aged 6 to 16 to create and share innovative, concrete solutions for a better world using digital technologies in open learning environments - makerspaces, for example, and to transform and foster early entrepreneurship education for Europe and beyond (Oct. 2017, PM Meeting).

Since the dissemination closely depends on the communication process it is important to know how and by what tools DOIT approach, goals and achievements are communicated via different communicative channels in order disseminate the relevant information for the target audiences.

**3. Goals of the Dissemination Report**

**3.1 DOIT’s dissemination objectives**

The objective of this deliverable is to present the dissemination activities for DOIT Project that have taken place so far, as well as, those that are envisioned beyond the end of the official project’s period. In this context, the term dissemination refers to the process of making available the concepts, results and deliverables to relevant stakeholders and to the wider audience.

**3.2 Timeframe for WP 7 activities**

The following table gives an overview about the most important results and reaches as well as activities that are described within the project description.
Table 1 Time table for important WP 7 issues

<table>
<thead>
<tr>
<th>Month</th>
<th>Tasks</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>03</td>
<td>7.1</td>
<td>10 success stories are online</td>
</tr>
<tr>
<td>06</td>
<td>7.1, 7.2, 7.4</td>
<td>Deliverable 7.2 (Communication and Dissemination Plan)</td>
</tr>
<tr>
<td>12</td>
<td>7.3</td>
<td>Deliverable 7.1 (Competition Plan)</td>
</tr>
<tr>
<td>15</td>
<td>7.1, 7.2, 7.4, 7.5</td>
<td>Deliverable 7.3 (Dissemination and Exploitation Report)</td>
</tr>
<tr>
<td>30</td>
<td>7.4</td>
<td>Final DOIT conference in Salzburg</td>
</tr>
<tr>
<td>36</td>
<td>7.4</td>
<td>Deliverable 7.4 (Final Communication, Dissemination and Exploitation Report)</td>
</tr>
</tbody>
</table>

3.3 Partners’ role and responsibilities

Partners’ role and responsibilities is shown in a communication plan matrix, Appendix A.

4. DOIT Communication Tools and Channels

To have the highest possible impact on the respective target audiences, the project consortium will employ a communication strategy based on:

- Online and interactive tools and channels (e.g. platform, social media);
- Non-electronic media (e.g. printed material);
- Physical interaction (e.g. events).

We will tailor different communication tools and channels to each of our target audiences to improve effectiveness and impact. For example, regarding channels, Facebook pages may target kids segmented only from age 10-16, kids from age 6-10 will be targeted differently, for example, using Instagram or YouTube.

4.1 Communication Tools

4.1.1 Brand Identity and DOIT style documents

The DOIT project has an existing visual identity (logo and common colours/graphic design for the platform and document templates, posters, etc.) and official information material. All materials are provided for all partners within the internal DOIT space.
4.1.2 Videos
DOIT will create videos from certain events as a broadcasting tool to attract wider audiences, such as videos created by every national partner in its native language, representing DOIT’s mission and ideas, as well as short videos, regarding progress and findings during the project.

4.1.3 Media Articles
Media articles refer to all types of written press articles focusing on presenting the DOIT’s activities and results that are published through different channels. Various media articles are related to the project concept and spreading the idea to target groups. Media articles are published on the project platform, on external websites including partners’ websites and social networks.

All publications / printed media should contain the H2020 acknowledgement statement in the appropriate language alongside the EU emblem as well as the DOIT logo supported by relevant partner’s logos and the platform URL (www.doit-europe.net).

4.1.4 DOIT final conference
Within M30, DOIT’s final conference will address European stakeholders, multipliers as well as facilitators. The venue will be Salzburg, Austria: the regional conference/convention centre St. Virgil seems a fitting location for this event. DOIT plans to address 150 participants from all over Europe, including children.

4.1.5 Other Tools
It includes different printed tools and promotion materials such as printed flyers, lanyards, DOIT flags, stickers and postcards.
4.2 Dissemination channels

In the following section, the current use and success per channel are described.

Table 2: DOIT channels

<table>
<thead>
<tr>
<th>Channel</th>
<th>Link</th>
<th>Activities (11/2018)</th>
<th>Followers, views, etc. (12/2018)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOIT Platform</td>
<td>doit-europe.net Email: <a href="mailto:info@DOIT-Europe.net">info@DOIT-Europe.net</a></td>
<td>Online since 16/09/2017 71 postings</td>
<td>4,000 views</td>
</tr>
<tr>
<td>YouTube</td>
<td><a href="https://www.youtube.com/channel/UCPhZ6Jv8k1psf_C8Znx3Shg">https://www.youtube.com/channel/UCPhZ6Jv8k1psf_C8Znx3Shg</a></td>
<td>In use since 11/10/2017 13 videos</td>
<td>Followers: 7 Views: 121</td>
</tr>
<tr>
<td>Instagram</td>
<td><a href="https://www.instagram.com/doit_europe/">https://www.instagram.com/doit_europe/</a></td>
<td>In use since 30/01/2018 99 posting</td>
<td>Followers: 876</td>
</tr>
<tr>
<td>Twitter</td>
<td><a href="https://twitter.com/DOIT_Europe_Net">https://twitter.com/DOIT_Europe_Net</a></td>
<td>In use since 23/08/2017 120 tweets</td>
<td>Followers: 124</td>
</tr>
<tr>
<td>LinkedIn</td>
<td><a href="https://www.linkedin.com/company/doit-europe/">https://www.linkedin.com/company/doit-europe/</a></td>
<td></td>
<td>Followers: 11</td>
</tr>
<tr>
<td>Slideshare (LinkedIn)</td>
<td><a href="https://www.slideshare.net/DOIT2020">https://www.slideshare.net/DOIT2020</a></td>
<td></td>
<td>Followers: 1</td>
</tr>
<tr>
<td>ResearchGate</td>
<td><a href="https://www.researchgate.net/project/DOIT-Entrepreneurial-skills-for-young-social-innovators-in-an-open-digital-world">https://www.researchgate.net/project/DOIT-Entrepreneurial-skills-for-young-social-innovators-in-an-open-digital-world</a></td>
<td>In use since 04/09/2017</td>
<td>Followers: 10</td>
</tr>
<tr>
<td>Medium</td>
<td><a href="https://medium.com/@europe-doit">https://medium.com/@europe-doit</a></td>
<td>In use since 01/02/2018</td>
<td>Followers: 41</td>
</tr>
<tr>
<td>SoundCloud</td>
<td><a href="https://soundcloud.com/doit-europe">https://soundcloud.com/doit-europe</a></td>
<td>In use since 28/02/2018 13 tracking</td>
<td>3</td>
</tr>
<tr>
<td>Electronic Newsletter</td>
<td>Subscription at <a href="http://DOIT-Europe.net">http://DOIT-Europe.net</a></td>
<td>6 Newsletter sent out</td>
<td>Subscribers: 231</td>
</tr>
</tbody>
</table>
4.2.1 DOIT knowledge sharing platform

The DOIT platform is one of the communication tools. The various tools for facilitators will be provided here during the project’s duration.

![Screenshot of the DOIT homepage](image)

*Figure 3: Screenshot of the DOIT homepage (2018-11-12)*

4.2.2 Facebook

Facebook is one of the main communication channels for sharing project-related content. Therefore, every success story will be shared here including a strong visual photo template. This supports the main communication strategy. In addition to that, some related articles and moments from different pilot sessions are posted as well. Throughout the project there will be posts shared including every update about the project’s development and activities: announcements about upcoming events, development and launch of toolboxes for children and facilitators and trainings and pilots. It is targeted at the general public, except for children below the age for which Facebook operates.
As shown in the screenshot, the DOIT Facebook community already consists of 682 people (2018.11.12). Regular project-related posts and new success stories are being shared, including in video format.

4.2.3 YouTube

On this channel, we upload video files of success stories to reach the target group of the general public. Videos will also be used for promotional as well as documentation purposes.
4.2.4 Instagram

Considering that it is a more informal communication channel, Instagram is a place where success stories as well as inspirational quotes will be shared. The aim of the channel is to show every success story and inspire by posting inspirational quotes about children’s creativity and change-making. It is targeted at the general public, especially facilitators and teachers, as this target group has a wide community on Instagram. It is also suitable to target organizations: Instagram has become very popular among businesses, so there are a lot of accounts of organizations and businesses.

Figure 6: Screenshots of DOIT Instagram account (2018-11-12)
The screenshots above show the structure of posts on Instagram: the content consists of success stories and inspirational quotes by using project-related visual elements. This Instagram account currently has 878 followers (2018-11-12).

### 4.2.5 Twitter

As a popular and frequently used social media channel, Twitter enables us to reach a diversity of audience groups. Both individual accounts and organisational linked Twitter accounts make it possible to reach the general public, policy makers, academia and scientists as well as relevant players in the industry. So far, we have posted links to various articles as well as success stories (using the same format as Facebook but only in .jpg format).
Figure 8: Screenshot of DOIT Twitter account (2018-11-12)

4.2.6 LinkedIn / Slideshare

As a social media channel, LinkedIn offers opportunities to reach a more professional audience in a formal tone. LinkedIn is specifically useful to reach professional individuals, organisations and networks within policy, academia and industry audience groups. Considering this kind of specific audience, LinkedIn will be used to share (scientific) publications.

Figure 9: Screenshot of DOIT LinkedIn account (2018-11-12)
4.2.7 Medium

Medium is a place where people can express their thoughts by writing blogs on various topics. Therefore we want to focus on adults who are interested in specific topics, e.g. educational, parenting topics. There are a lot of articles on both science and entertainment. Medium is used a place to upload success stories which are later shared on other social media accounts.

4.2.8 SoundCloud

SoundCloud is an online audio distribution platform where success stories started to be uploaded in audio format on 01/03/2018. These tracks are targeted at the general public but the platform also provides an opportunity for people with a visual disability to explore the project’s stories of success.
The table of social media KPIs shows the monitoring and development of social media channels on every DOIT’s social media account. Right now (month 15, December 2018) our communication strategy (considering these KPIS) is falling behind the plan that was presented in the deliverable 7.2.

The development of the process is illustrated in both social media KPIS tables. The first one presents the planned reach and the second table presents the actual reach of people.

<table>
<thead>
<tr>
<th>CHANNEL</th>
<th>Facebook</th>
<th>Instagram</th>
<th>Twitter</th>
<th>Medium</th>
<th>LinkedIn</th>
<th>SoundCloud</th>
<th>Youtube</th>
<th>Hor/You</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOLLOWERS:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>October 2017</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>November 2017</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>December 2017</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>January 2018</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>February 2018</td>
<td>598</td>
<td>316</td>
<td>73</td>
<td>12</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>March 2018</td>
<td>639</td>
<td>416</td>
<td>173</td>
<td>27</td>
<td>3</td>
<td>12</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td>April 2018</td>
<td>738</td>
<td>516</td>
<td>273</td>
<td>42</td>
<td>10</td>
<td>22</td>
<td>22</td>
<td>5</td>
</tr>
<tr>
<td>May 2018</td>
<td>898</td>
<td>516</td>
<td>373</td>
<td>57</td>
<td>15</td>
<td>32</td>
<td>32</td>
<td>10</td>
</tr>
<tr>
<td>June 2018</td>
<td>998</td>
<td>736</td>
<td>478</td>
<td>72</td>
<td>20</td>
<td>42</td>
<td>42</td>
<td>15</td>
</tr>
<tr>
<td>July 2018</td>
<td>1098</td>
<td>836</td>
<td>583</td>
<td>87</td>
<td>25</td>
<td>52</td>
<td>52</td>
<td>20</td>
</tr>
<tr>
<td>August 2018</td>
<td>1198</td>
<td>956</td>
<td>688</td>
<td>102</td>
<td>30</td>
<td>62</td>
<td>62</td>
<td>25</td>
</tr>
<tr>
<td>September 2018</td>
<td>1298</td>
<td>1076</td>
<td>793</td>
<td>117</td>
<td>35</td>
<td>72</td>
<td>72</td>
<td>30</td>
</tr>
<tr>
<td>October 2018</td>
<td>1398</td>
<td>1196</td>
<td>898</td>
<td>132</td>
<td>40</td>
<td>82</td>
<td>82</td>
<td>35</td>
</tr>
<tr>
<td>November 2018</td>
<td>1498</td>
<td>1316</td>
<td>1008</td>
<td>147</td>
<td>45</td>
<td>92</td>
<td>92</td>
<td>40</td>
</tr>
<tr>
<td>December 2018</td>
<td>1598</td>
<td>1416</td>
<td>1108</td>
<td>162</td>
<td>50</td>
<td>102</td>
<td>102</td>
<td>45</td>
</tr>
</tbody>
</table>

Table 3: Planned reach of people according to the Deliverable 7.2 (2018-03-22)
For now, the most successful social media channels are Instagram and Facebook. Less followers have Soundcloud and Youtube. However, as the pilots in different countries have already started, more videos/sound records will be uploaded in the following channels after receiving the relevant material from all the partners.

In order to follow social media progress within months, the following Google spreadsheet is provided: https://docs.google.com/spreadsheets/d/1dd6TQ4AbP_R9gcdpMVvLYD0qtoXDwqrgsVShjBW78/edit#gid=0
5. Analytics of the Report on Dissemination and Communication Activities

5.1 Composition of the report

While filling the report on dissemination and communication activities all partners of consortium have to highlight and share the up-to-date data related to different types of activities and the whole number of people reached by these activities.

The number of reached people is divided into different target groups:

- Scientific community (higher education, research)
- Industry
- Civil society
- General public (DOIT: parents)
- Policy makers
- Media
- Investors
- Customers
- Children
- Other

Speaking about activities, they are divided into 3 main groups: Events, Publications (non-scientific) and Scientific Publications. Accordingly, all of them are later subdivided into more detailed sub-categories.

The next section will discuss the outcome of different categories and the number of people reached that is the result of all DOIT Project partners.

5.2 Types of dissemination and communication activities

Here are briefly presented different types of dissemination and communication activities that are carried out by different DOIT partners.

5.2.1 Events

The Events category is divided into two branches – Training (that is the sum of DOIT actions, DOIT facilitator trainings) and Conferences (DOIT: scientific).

The first one, trainings is subdivided into the following actions:

- DOIT actions (pilot phases)
- DOIT other workshops for children (e.g. in roll-out phase)
- DOIT facilitator trainings (e.g. in roll-out phase)
- Other trainings
The second group – Conference is also subdivided as follows:

- Organisation of a Conference
- Organisation of a Workshop (DOIT: at a conference)
- Participation to a Conference
- Participation to a Workshop (DOIT: at a conference)
- Participation to an event other than a conference or a workshop
- Trade Fair (in DOIT: maker faire)
- Brokerage event
- Exhibition (DOIT: including exhibitions of DOIT actions)

5.2.2 Publications (non-scientific)

This category includes the information about the non-scientific publications, the type of press release together with its valid link as well as communication tools and communication on social media.

- Press release
- Non-scientific and non-peer-reviewed publication
- Communication campaign
- Website (DOIT: postings at organisation’s homepage)
- Social media (DOIT: at organisation’s homepage)
- Flyer (DOIT: printed material that was handed out)
- Video/Film
- Other (DOIT: Newsletter)

5.2.3 Scientific publications

This section gives an overview of the scientific publications such as papers in journals and conference proceedings published by partners in the reporting period.

5.3 The total outcome of dissemination and communication activities

All DOIT partners reported their dissemination and communication activities that cover the period of 10/2017 – 12/2018. Moreover, they provided the total number of people reached which helps to understand which activities were most engaging and attractive for both – children and facilitators. All the results will be presented in the following sub-section.

<table>
<thead>
<tr>
<th>Activities</th>
<th>Number of dissemination materials and events</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organisation of Conference</td>
<td>2</td>
</tr>
<tr>
<td>Organisation of a Workshop</td>
<td>5</td>
</tr>
<tr>
<td>Press release</td>
<td>5</td>
</tr>
<tr>
<td>Non-scientific and non-peer-reviewed publication</td>
<td>6</td>
</tr>
</tbody>
</table>
Exhibition | 3  
---|---
Flyer (flyer, postcards, div.dissemination print products) | 6  
Training (DOIT actions, DOIT facilitator trainings & other workshop for children) | 22  
Social media channels | 8  
Website (news from DOIT’s homepage) | 12  
Communication campaign (e.g. Radio, TV) | 0  
Participation to a Conference | 20  
Participation to a Workshop | 0  
Participation to an event other than a conference or a workshop | 7  
Video/film | 0  
Brokerage event | 0  
Pitch event | 0  
Trade fair (in DOIT: maker faire) | 4  
Participation in activities organized jointly with other projects | 0  
Other | 10  

Table 5: List of dissemination materials and events produced and organised by consortium partners

Up till now, DOIT with all partners has carried out:

- **22 trainings**
- and participate in **20 conferences**
- **8** of these activities – **Joint activities**

During these events, even 640 flyers were distributed as a non-electronic communication tool (printed material).

The total number of people that were reached:

- By training activities – **1,012**
- By participation and organization of a conference – **1,963**

During the above mentioned activities, the estimated number of all target groups reached is - 61,674 (exact numbers of each target group reach is indicated in the table below). As DOIT aims to involve family associations, promotes community setting activities (i.e. public events where parents come with their children) and provides webinars and webchats open for everybody the highest number of people reached was indicated in the target audience of general public (DOIT: parents).
### The Estimated Number of People Reached

<table>
<thead>
<tr>
<th>Category</th>
<th>Reach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scientific Community (Higher Education, Research)</td>
<td>6324</td>
</tr>
<tr>
<td>Industry</td>
<td>1675</td>
</tr>
<tr>
<td>Civil Society</td>
<td>2112</td>
</tr>
<tr>
<td>General Public (DOIT: parents)</td>
<td>44835</td>
</tr>
<tr>
<td>Policy Makers</td>
<td>799</td>
</tr>
<tr>
<td>Media</td>
<td>483</td>
</tr>
<tr>
<td>Investors</td>
<td>207</td>
</tr>
<tr>
<td>Customers (in DOIT context: potential facilitators)</td>
<td>611</td>
</tr>
<tr>
<td>Other (in DOIT context: typically children)</td>
<td>4628</td>
</tr>
</tbody>
</table>

*Table 6: The estimated number of people reached by different activities*

NOTE: Numbers of dissemination events produced and people reached are constantly marked on the report on dissemination and communication activities by all consortium partners: [https://docs.google.com/spreadsheets/d/1_iQQi4nKbkfAoaAip8ORNMzVxCyxF6XXtIgqY2g3I/edit#gid=528066699](https://docs.google.com/spreadsheets/d/1_iQQi4nKbkfAoaAip8ORNMzVxCyxF6XXtIgqY2g3I/edit#gid=528066699)

5.3.1 Events - trainings

Out of 22 trainings 3 activities were assigned to *DOIT actions (pilot phases)*, 15 activities to *DOIT workshops for children*, 1 activity to *DOIT facilitator training* and 3 activities were regarded as *other trainings*.

The first sub-category, *DOIT actions (pilot phases)* were carried out by ZSI in Austria and by MEPF in Germany.

The first, ZSI has carried out DOIT action (pilot phase), as a part of the pilot testing of the DOIT approaches which reached 66 people: 40 from general public, 2 policy makers, 3 media, 3 customers and 18 children.
Lastly, **MEPF** in Berlin carried out 4 different DOIT actions (pilot phases).

- **HEBOCON** – scrap monsterbots for the whole family (16/02/2018) –
- 5-day DOIT Pilot **FUTURE MONSTER LAB** (29/10/2018) – 520 people reached: 5 scientific community, 100 education industry, 20 civil society, 60 general public, 35 children, 100 others. [https://medialerpfade.org/future-monster/](https://medialerpfade.org/future-monster/)

**Figure 13:** Screenshot of article about DOIT action (pilot phase) in the official ZSI website (2018-11-12)

**Figure 14:** Screenshot of DOIT action (pilot phase) events, MEPF (2018-11-12)
The second sub-category, other DOIT workshops for children were carried out by SRFG, CoC, LUT and by ZAK.

**SRFG** has carried out 4 activities:

- Kiwi Kindergarten (15/05/2018, Innudeck Salzburg Research) - 13 people reached: 13 children
- DOIT at Makers Days in Stadt: Bibliothek Salzburg (3 days) – 87 people reached: 75 children, 2 scientific community, 3 civil society, 5 general public, 2 media.
  
  https://www.salzburgresearch.at/presseaussendung/maker-faire-salzburg-vom-schrott-roboter-zur-proble
mlosung-von-morgen/

![Figure 15: Screenshot of DOIT workshop for children, SRFG (2018-11-12)](image)

**CoC** in Denmark organized the following DOIT actions:

- Orientation to head of schools in the municipality of Billund (14/06/2018) – 8 people reached.
- Orientation to the parents and staff at Vestre School (26/08/2018) – 250 people reached: 240 parents and 10 others.
- Workshop training the facilitators (25-25/08/2018) – 30 people reached: 29 children and 1 others.
- Test pilot as a pre-pilot workshop (17, 20, 21, 22/08/2018) – 158 people reached: 100 general public, 50 children and 8 others.
Another partner, LUT in Finland carried out a presentation of DOIT action at Moi Art Cultural Center (16/07/2018, Lappeenranta Finland). During this activity 10 people were reached – all of whom were children.

Lastly, ZAK carried out 3 DOIT actions in September 2018: “E-techstyle: introductory workshop” (13/09/18) and “E-Carry: open laboratory” (22/09 and 27/09/18) – all of them reached 30 people.

![Figure 16: Screenshot of DOIT workshop events in RAMPA Lab and Kersnikova (ZAK) (2018-11-12)](image-url)

29
The third sub-category – **DOIT facilitator trainings** was carried out only by **SRFG** in Austria and Germany. They organized facilitator training at Mini Makerfaire Salzburg (8/11/2018, Salzburg) – 7 people from scientific community reached. Also Information & Media Literacy conference 2018 (23/11/2018, Passau).

Lastly, the fourth sub-category called **other trainings** were conducted by two partners: **WAAG** in the Netherlands and **ESI** in Lithuania.

**WAAG** organised Maker Education Lecture to Danish Education Delegates in Amsterdam (26/04/2018) – 15 people reached.

### 5.3.2 Events - conferences

As mentioned before, DOIT partners indicated having participated in 41 different conferences which in total attracted 8,778 people.

Out of 41 conferences 20 were described as **Participation to a Conference**, 2 as **Organisation of a Conference**, 7 as **Participation to an event other than a conference or a workshop**, 4 as **Trade Fair (DOIT: maker fair)**, 5 as **Organisation of a Workshop** and 3 as **Exhibition**.

The first sub-category - **Organisation of a Conference** was indicated by **MEPF**


*Figure 17: Screenshot of MEPF conference evidence (2018-11-12)*
The second sub-category - Participation to a Conference was indicated by these partners: SRFG, WAAG, ZSI, IAAC and ZAK.

SRFG has participated in 9 different conferences – all of which reached 435 people: 171 scientific community members, 14 industry, 30 civil society, 55 general public, 14 policy makers, 9 media, 4 investors and even 138 customers.

<table>
<thead>
<tr>
<th>Activities</th>
<th>HOW MANY PEOPLE WERE REACHED BY THIS ACTIVITY? (DON'T COUNT PEOPLE TWICE!)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Scientific Community</td>
</tr>
<tr>
<td></td>
<td>Industry</td>
</tr>
<tr>
<td>Participation to a Conference</td>
<td>9</td>
</tr>
<tr>
<td>Presentation Sandra Scholz, Maker Education als ein Beitrag für eine neue europäische Entrepreneurship Education?, 5. Oktober 2017 in Eisenstadt, eLearning Experts Conference 2017, Schule 4.0 – Lernen in einer digitalen Welt</td>
<td>1</td>
</tr>
<tr>
<td>Presentation Sandra Schön (2017). Maker-Ideen und -Projekte, die die Welt verandern - digitale soziale Innovationen mit Kindern und Jugendlichen. eEducation Tagung at Interpaedagogica 2017 in Salzburg, 24.11.2017</td>
<td>1</td>
</tr>
<tr>
<td>Sandra Schön (2018). Participant at Panel-Discussion „Können Making, Open Source und Design die Schule von morgen inspirieren?“ re:publica 2016, 4. Mai 2016, Berlin</td>
<td>1</td>
</tr>
</tbody>
</table>
Figure 18: Participation in conferences, SRFG (2018-11-12)

**WAAG** participated in two conferences – in Steamconf (April 2018, Barcelona) and Fab City Summit (July 2018, Paris) [https://summit.fabcity.paris/program/](https://summit.fabcity.paris/program/). Both of these conferences reached 280 people: 100 scientific community members, 10 industry members, 20 civil society, 10 general public, 20 policy makers, 10 media and 110 others.

In the same SteamConf 2018 also participated another partner DOIT partner – IAAC.
ZSI has participated in one conference called MIS4TEL presentation of Elisabeth in Spain. This activity reached 80 people from scientific community.

The last one, ZAK participated in 4 different conferences:

- Jurij Krpan: Peer to Peer Knowledge Transfer at 11th International Sirikrt Conference. [https://www.sirikt.si/posnetki/](https://www.sirikt.si/posnetki/)
- Jurij Krpan: Peer to Peer Knowledge Transfer at the Entrepreneurship in Education Festival. [https://www.zrssi/objava/event/festival-podjetnosti-v-izobrazevanju](https://www.zrssi/objava/event/festival-podjetnosti-v-izobrazevanju)
- Jurij Krpan: Presentation of investigative learning and peer to peer knowledge transfer at the event course in open education design / UNESCO, Chair on Open Technologies for Open Educational Resources and Open Learning at Jožef Stefan Institute. [http://unesco.ills.si/event/open-education-design/](http://unesco.ills.si/event/open-education-design/)

All of these activities reached 840 people in total. 820 scientific community members and 20 policy makers.

The third sub-category that is Participation to an event other than a conference or a workshop was indicated by ESI, YPA, ZSI and SRFG.

ESI has participated in three events:

- Junior Achievement Lithuania Summer camp. By this activity 70 people were reached: 63 children and 7 others. During this event, children up to 16 years old were taught entrepreneurial skills. The leader of ESI has contributed to camp’s activities by organising an open discussion about youth entrepreneurship, including examples of DOIT Project (36 people reached).
- Youth Entrepreneurship Academy’s event. Here young entrepreneurs (10-16 years old) presented their business ideas (34 people reached: 27 children and 7 others).
- CEE Impact Day 2018. On October 4-5th, ESI participated in the event where social innovators and other influential and experienced people brainstormed revolutionary ideas for children education. ESI contributed to various ideas by suggesting DOIT as a model for the empowerment of girls and boys to develop and share innovative, concrete products and solutions for a better world by using digital tools in makerspaces.

YPA has participated in the 1st European Education Summit where they contributed to networking various activities (25/01/2018, Brussels). This activity reached 16 people.
Another partner ZSI has made a presentation of results of the first pilot during parents information event in Größming, 18/09/2018. This event reached 60 people from general public, in particular parents.

Lastly, SRFG participated in two events:


- **Sandra Schön (SRFG) represented DOIT at the expert workshop “SSH (Social Sciences and Humanities within the Societal Challenges (Horizon 2020) – sharing experiences on impact and mission orientation”. The workshop was organised by the Austrian Research Promotion Agency (FFG) and took place in Vienna, 03/07/2018. It involved 20 experts: 14 scientific community members and 2 civil society members.**
The third sub-category that is Trade fair (in DOIT: maker faire) was indicated by SRFG and ESI.

During this type of activity ESI has participated in “Juniors Achievement Lithuania” maker faire (16/05/2018) which reached 102 people – all of whom were children.

SRFG indicated Mini Maker Faire Salzburg 2018 (10/11/2018) which reached even 1100 people: 600 general public members and 500 children.

The fourth sub-category called Organisation of a Workshop (DOIT: at a conference) was indicated by one partner – ZSI. They contributed to DOIT workshop at Interpädagogica (24/11/2017) which in total reached 40 people.

The last sub-category, Exhibition was indicated by SRFG. They included to exhibitions that were organized in Austria:

- DOIT at “Long night of research” in Salzburg 2018, which reached 1516 people in total: 70 scientific community members, 100 industry members, 400 civil society, 500 general public (parents), 30 policy makers, 16 media members and 400 children.
- Exhibition of dissemination material of MakerDays – MakerDays Saalfelden.
6.3.3 Publications (non-scientific)

This activity sections is related to various publications, press release, other communication tools and social media activities.

In total, during this period that covers 10/2017 – 11/2018, DOIT partners indicated to have prepared:

- 5 press releases (ZSI, SRFG + Joint activities)
- 6 non-scientific and non-peer-reviewed publications (SRFG)
- 12 activities on their website that are related to DOIT (SRFG, ZSI, YPA + Joint activities)
- 366 posts on their social media channels (SRFG, ZSI, LUT, IAAC, YPA, MEPF + Joint Activities)
- 640 flyers – DOIT’s printed material that was handed out (SRFG, ZSI)
- 10 other activities (DOIT: Newsletter) (YPA, SRFG + Joint activities)
In order to see which of them reached the biggest number of people, we calculated the total sum:

- Press release – 37,610 people (37,400 ZSI, 210 Joint activities)
- Non-scientific and non-peer-reviewed publications – 524 people
- Activities on the website – 6,259 people
- Posts on social media channels – 48,149 people
- Other activities – 3,889 people

See examples of our partners activities related to non-scientific publications:

PRESS RELEASE


ZSI has indicated to have prepared 3 press releases and in total they reached 37,400 people:

- Junge Tüftler begeistern mit Kreationen, Kleine Zeitung (daily newspaper) 8 Sept. 2018
- Spannender Ferienaußgang in der Tüftlerwerkstatt - Emmsseiten (weekly magazin) - 12. September 2018
- Gemeindeblatt monthly info sheet of community (Oktober)
NON-SCIENTIFIC PUBLICATIONS AND NON-PEER-REVIEWED PUBLICATIONS


WEBSITE ACTIVITIES

Figure 26 Screenshot of DOIT on SRFG Website (04.10.2018) https://www.salzburgresearch.at/projekt/doit/
Figure 27: Screenshot of DOIT on ZSI Website (10.2017), https://www.zsi.at/de/object/project/4545

Figure 28: Screenshot of DOIT information page on the ZSI Website (10.2017), https://www.zsi.at/de/object/news/4598
Figure 29: Screenshot of DOIT on ZSI Website (08.2018) https://technikundwissen.zsi.at/?p=1537

Figure 30: Screenshot of DOIT on ZSI Website (02.2018) https://technikundwissen.zsi.at/?p=1334
Exciting vacation conclusion in the “Tüftlerwerkstatt”

GRÖßING Last week, 18 children from Größing and the surrounding area had the opportunity to implement various inventions in the Größing elementary school for four days as part of a workshop set up by the ZSI (Center for Social Innovation). Children between the ages of six and twelve were given the task of finding solutions to everyday emergency situations, saving energy and resources and also thinking about social aspects.

A flood alarm system, a temperature-sensitive fan, a dryer that reacts when wet, an automatic smoke and gas door closer and a security anti-theft device - these were the results. Invented, designed and built by the kids themselves and on the last workshop day parents, grandparents and friends proudly presented.

... read more in the current issue or Wednesday, September 12, 2018!

Figure 31: Screenshot of DOIT on Ennssitzen Website, ZSI.
http://www.ennssitzen.at/spannender-ferienausklang-in-der-tueftlerwerkstatt/

Figure 32: Screenshot of DOIT on YPA Website (21.09.2018).
http://youthproaktiv.org/doit-project-and-our-partner-meeting-in-barcelona/
Figure 33: Screenshot of DOIT on YPA Website (27.03.2018). http://youthproaktiv.org/doit-project-meeting-in-billund/

Figure 34: Screenshot of DOIT on YPA Website (20.01.2018). http://youthproaktiv.org/projects/doit-project/
Figure 35: Screenshot of DOIT partners posts on different social media channels
OTHER (DOIT: NEWSLETTERS)

DOIT Deliverable 7.3 “Dissemination and Exploitation Report”

Dear supporters, partners and believers,

We hope that you all had a nice Christmas break and a nice January. We also used the holidays as inspiration and are now working hard on our tasks again. That’s why there is only a short update in our January newsletter. Let’s see what happened last month and take a look at what’s coming up next!

DOIT Success Stories

In order to reach as many people as possible and to get supporters for DOIT it is also important to promote the project. In November our partner backbase research held the event “DOIT in Action” at Stockholm’s largest national museum.

Let’s DOIT!

Dear reader,

If you read this, you are one of our partners, supporters or early followers - so welcome to the first newsletter of the Horizon 2020 project DOIT! In our monthly updates we want to provide you with inspiring content about our work and tell you what’s going on around Europe. You will hear about our events, working process and what you can expect in the future. We will share our stories about social innovations from amazing children who work together to create a better world. So stay updated with our DOIT newsletter! Of course it would be great if you invite your friends, so we can spread our mission as far as possible. Happy reading and enjoy!

Your DOIT team

DOIT’s aim is to empower girls and boys from 6 to 16 years to develop and share innovative solutions potentially shaping a better world. This will be made possible using digital technologies in open learning environments, such as webspaces. DOIT will foster a new easy entrepreneurial education approach for Europe and beyond.

Want to meet us?

We want to share our work with everyone who is interested in the world of digital social innovations. Our community is growing every day and our goal is to reach as many children and families as possible.

DOIT already published more than 30 success stories of children and young people who developed a product or application with impact for their friends or society. In the background, we are still in the developing phase and had our second project meeting in Billund, Denmark.

We kicked it off!

In October all DOIT partners got to know each other during our kick-off meeting in Amsterdam. For two days, we worked on how to achieve DOIT’s goals over the next 36 months. 13 partner teams from 11 countries met.

In March, we had our second project partner meeting at the perfect making location: Our partner Capital at Children invited us to Billund to work at the capital of LEGO. You can read about our impressions on our blog!

In order to reach as many people as possible and to get supporters for DOIT...

FIRST
Dear readers,

Also the members of the DOIT team enjoy the summer - of course we would still like to keep you informed. Take a look at our great success stories from creative and innovative kids or find out where you can meet us in the next time. We are also continuously uploading materials from conferences or workshops to show you the approach and work of DOIT. Let yourself be inspired and enjoy your summer!

Your DOIT team

This success story shows how powerful young people can be in solving environmental problems. Read about a young girl and her team who came up with a suggestion to distribute clean and sustainable energy - the Crediter.

I am a creator - this is a statement we love to hear from children. Take a look at this success story about a young creative boy, who loves to create innovative solutions on various problems he finds. A real future change-maker?

Your DOIT team

An exciting phase in our project started in September: our first pilot phase started! 11 practice partners will carry out their first pilot activities in the coming weeks, where we will test the DOIT approach and develop materials for your use. In addition to this highlight, our third project meeting took place at the end of August at our partner’s facility in Barcelona (IAAC). And some partners had great opportunities to present DOIT during the last weeks. Keep reading to stay informed.

Your DOIT team

Figure 36: Screenshot of DOIT Newsletters, Joint activity by all partners

Figure 37: Screenshot of DOIT dissemination in McCallum E., Weight R., McMullan L., Price A., (2018). EntreComp into Action: get inspired, make it happen (M. Bacigalupo & W. O’Keefe Eds), SRFG and ZSI
6.3.4 Scientific Publications

In the reporting period researchers of project partners published the following papers in journals and conference proceedings:


Forthcoming papers: Accepted papers which will appear in the next reporting period are

7. Next steps

We consider the first phase of dissemination activities as the one laying the foundation for creating awareness on DOIT aims. Besides the pilot, the next steps in the dissemination strategy will be to focus on the forthcoming DOIT online activities such as supporting the dissemination of the information and marketing of the online-pilots, the MOOC-course, the expert meetings and the final conference. The final results and the summary of DOIT achievements and reach are planned to be presented in the final communication, dissemination and exploitation report (Deliverable D7.4) due to M36.
Appendix: Responsibilities of Partners

<table>
<thead>
<tr>
<th>Partner</th>
<th>Responsibilities</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate</td>
<td>2 Corporate</td>
<td>Every week</td>
</tr>
<tr>
<td>Meet our team</td>
<td>Introduce new partners</td>
<td>Every week</td>
</tr>
<tr>
<td>Meet participants</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**5.2. EDUCATION**

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>Frequency</th>
</tr>
</thead>
</table>
| Create awareness | |}

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>Frequency</th>
</tr>
</thead>
</table>
| Maker | |}

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>Frequency</th>
</tr>
</thead>
</table>
| Celebrate | |}

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>Frequency</th>
</tr>
</thead>
</table>
| Follow-up | |}
| 3. Events |  | YEA | To inform about events, where children would be able to develop ideas, prototypes, solve problems, etc. and attract participants. | M28 | 2-3 times announcements about upcoming events. | M30 |
| DOIT events | | M13 | Important about when and where a gym on (send to primary project). | M13 | M30 |
| 2. Trainings for facilitators | | YEA | To inform about opportunity to participate in training workshops and attract participants. | M32 | M30 |
| 3. Conferences and presentations | | M13 | To represent results of project’s researches. | M30 | M30 |
| 4. DOIT week | | YPA | To spread DOIT concept by organizing various events. | M32 | M33 |

**Figure 38:** An overview of planned contributions of partners to the DOIT communication strategy.
PART B: DOIT Exploitation Plan

1. Introduction and overview

The term exploitation refers to the utilization of assets developed in the DOIT project in different activities after completion of the funded life cycle of the project. Such activities include:

- **Content products**: Re-use of material produced in DOIT to create and offer value added new products.
- **Services and support**: Evidence-based consultancy, training of educators/facilitators, courses for students, support of the implementation of makerspaces (e.g. in schools, libraries, community centres).
- **Research projects**: Use knowledge generated in DOIT for research in follow-up national or international projects, e.g. establish new collaborations, exploit interesting research questions, re-use tools and data for comparative research.

The DOIT exploitation plan presents a review of the exploitation potential of DOIT assets based on a study of relevant market actors and developments. The following chapters of the exploitation plan cover:

**Chapter 2: Exploitation principle, USP, and policy drivers**

The basic exploitation principle explains how the open approach of DOIT regarding the content products opens up exploitation potential, for example, regarding demand for services related to the DOIT learning programme (e.g. consultancy, training and support, evaluation).

The DOIT learning programme focuses on social innovation and entrepreneurial learning of young people (aged 6-16 years) in makerspace-based activities. The USP (unique selling proposition) of the programme consists in what makes it specific and different from other educational offerings, including STEM learning in makerspaces, typical Entrepreneurship Education, and various event-based engagement activities (e.g. hackathons).

In addition, a section highlights the alignment of the DOIT learning programme with key European policies in the area of social and educational innovation with a focus on digital and entrepreneurial skills. These policies and measures can be strong drivers for a wide adoption of the programme and demand for related expertise and services of the project partners.

**Chapter 3: Exploitable assets of the DOIT innovation action programme**

DOIT develops and provides an ambitious innovation action programme which offers educational and social innovators a range of activities and products to make a difference. After completion of the funded project life cycle DOIT partners will have a range of assets which they can exploit in further activities (e.g. research, consultancy, training and support, evaluation).

Chapter 3 first briefly introduces the programme and then gives a detailed overview of the exploitable assets, including potential customers and users. Which partners may be positioned best for exploiting different assets in certain ways is addressed in chapter 5, after the market analysis presented in chapter 4.
Chapter 3 also includes a section on how to sustain and exploit Open Educational Resources (OER) made available under the Creative Commons Attribution (CC BY 4.0) license. This license allows unrestricted re-use, except that the project and individual creators must be recognised. This open approach enables partners to capitalise on other assets but makes exploitation of the OER as such difficult. Therefore, business models need to be considered which could work in such a situation. The section presents results of a study of literature on OER business models, including an overview of options and some key points derived from the study.

Chapter 4: Market overview and developments

This chapter describes the development of core market segments for the DOIT social innovation and entrepreneurial learning programme. Furthermore the current situation of entrepreneurship education in European schools, and examples of various non-formal programmes and activities for entrepreneurship training.

The core market segments are schools that already provide (few) or intend to develop makerspace-based learning, and makerspaces outside the educational sector which offer engagement and learning opportunities as part of their activities. The latter comprise Fab Lab, hackerspaces and other makerspaces provided by public and civil society organisations. The sections on these market segments describe recent developments and provide figures (where available) and outstanding examples.

Across Europe schools are requested to provide entrepreneurship education, however are often not well prepared for this task. Therefore they turn to programmes for teachers and students offered by external providers. Building on the USP and a strong branding of the DOIT learning programme partners may capture some of this demand. Regarding the existing supply, a selection of examples from a screening of offers is included in this chapter.

Chapter 5: Exploitation scenarios

Building on the market study results, this chapter first outlines a scenario of what is likely to happen within the next 5-10 years. The expected developments will bring educational institutions (lacking makerspaces) and makerspaces outside the educational sector closer together, opening up opportunities to exploit assets generated in DOIT.

As a key result of the current exploitation plan, the chapter gives an overview of various exploitation options of project partners. The overview includes details of the form of exploitation and user groups per relevant asset, and partners who may be positioned best for the exploitation. More detailed exploitation plans of partners can start from this overview of options.

Chapter 6: Towards individual and joint exploitation plans

The final chapter gives an overview of the activities during the reporting period which helped partners consider relevant options for exploiting DOIT assets and preparing business plans (e.g. business canvas modelling). Furthermore the exploitation support and monitoring activities planned for the next project phases are described.
2. Exploitation principle, USP, and policy drivers

2.1 Basic exploitation principle

DOIT is an Innovation Action publicly funded by the European Commission under the Horizon 2020 programme. The overall aim of DOIT is to develop and disseminate as wide as possible a new approach of early stage social innovation and entrepreneurial learning based on maker activities. A broad take-up of the approach by makerspaces, schools and other learning environments such as libraries and museums will allow young people acquire skills and mindsets as required by innovative entrepreneurs, employees and engaged citizens.

For DOIT therefore exploitation in the first place means allowing the project’s main target groups, pupils/students, educators and facilitators, use and re-use the project results as easy and widely as possible. A core component of this exploitation approach is open licensing of the DOIT products under the Creative Commons Attribution (CC BY 4.0) license. The license allows unrestricted re-use of products, except that the project and individual creators must be recognised.

The open approach of DOIT regarding the products does not impede exploitation activities of the project partners. On the contrary, the more users such as municipalities, schools, makerspaces, civil society organisation and others intent to adopt the DOIT approach, the higher is the potential of the partners to generate income through providing related services (e.g. consultancy, training and support) and participation in funded implementation projects.

However, according to their legal forms or statutes all DOIT partners are not-for-profit organisations. Therefore for the DOIT partners income generation is not meant as a commercial activity but helps sustaining and possibly extending operations and, thereby, generate more value for their constituencies and society as a whole.

2.2 USP of the DOIT learning programme

DOIT suggests using makerspaces, within schools and external, to promote practice-based social innovation and entrepreneurial learning of young people as well as educators. Makerspaces can allow them to connect to “real-world” issues and seize opportunities provided by new digital technologies.

The DOIT learning programme comprises the methods, services and materials for the social innovation and entrepreneurial learning journey of pupils/students and teachers. What is specific about the DOIT learning programme, in the sense of a unique selling proposition (USP), is that it focuses on social innovation and entrepreneurial education of young people (aged 6-16 years) based on activities in makerspaces.

This distinguishes the activities, methods, materials and intended outcomes of the DOIT learning programme from three other offerings:

- Makerspace-based STEM learning
- Typical Entrepreneurship Education
- Various engagement programmes for young people

We briefly describe what distinguishes the DOIT learning programme from these offerings:

Makerspaces-based STEM learning

As far as makerspaces already made it into educational institutions and other learning contexts (e.g. libraries, museums), the predominant approach today is learning of STEM - Science, Technology, Engineering and Mathematics.
This approach tends to narrowly focus on promoting basic technical knowledge and skills through using digital fabrication tools (e.g. 3D design and printing) or programmable tools (e.g. Arduino, Makey Makey, Raspberry Pi) for sensors-based, robotics and other applications.

The DOIT learning programme also provides a practice-based approach, but a more open and arguably more meaningful one. It engages young people through tackling social or environmental issues they perceive in their local environment. When they work on such issues, STEM can follow, because young people, especially also girls, will naturally take an interest in technologies relevant for their project.

In short: the main distinction here is STEM learning vs. tackling social or environmental issues.

**Entrepreneurship Education**

Typical Entrepreneurship Education (EE) lacks a practical context of learning, product prototype development, and a focus on social or environmental issues. EE programmes mostly focus on learning about and for future entrepreneurship (e.g. what makes an entrepreneur, business idea creation, business plan writing, etc.), while some also include tentative entrepreneurial activity (e.g. the “mini-company” concept).

In contrast, the DOIT approach is practice-based (“making”) from the onset and provides a learning journey from identifying a local issue to presenting a prototypic or minimal viable solution in public, to potential users and sponsors. Entrepreneurial questions such as who will adopt the solution (market) and resources required to provide it (costs, financial support) are infused during the making and learning process. This can serve as a pre-stage to learning more about business aspects of entrepreneurial activity.

In short: the main distinction here is between EE for business vs. a learning journey for young social innovators.

**Engagement programmes for young people**

There is a mushrooming of programmes and events which invite young people to propose and develop ideas for an award, competition or challenge (e.g. how to reach UN Sustainable Development Goals). These have various formats but generally encourage young people to come forward with an idea, provide some help to elaborate and develop it to some point, and then present it to a jury that selects the award winners. The mushrooming of such programmes and events, indeed, a whole engagement industry, is useful as many young people are stimulated to think about societal and environmental issues and how they could contribute to potential solutions. On the downside arguably is that there are only a few winners thus replicating patterns of an overall ever more competitive socio-economic environment.

In contrast, DOIT combines pedagogical elements, maker principles and social innovation concepts in a learning programme which allows children and young people to work constructively on issues they perceive in their local environment. Co-creation of potential solutions in a non-competitive setting is a core element of the approach. The learning programme is conceived for children and young people in the age range 6-16 years, the engagement activities and events usually target young people at the upper level of this age range and older.

In short: the main distinction here is between a systematic learning programme for small groups vs. engagement and events for many.
2.3 Policy drivers for the DOIT approach and programme

The DOIT innovation action plan offers educational and social innovators an ambitious programme of activities to make a difference (see Section 3.1). The action plan and its core element, the DOIT social innovation and entrepreneurial learning programme, are aligned with key European socio-economic and educational policies. Consequently, the policies can be strong drivers for a wide adoption of the programme and demand for related expertise and services (e.g. consultancy, training and support, evaluation) of the project partners. Therefore we briefly address the key policies and some recent developments.

Europe needs more young people with an entrepreneurial mindset and skills able to turn creative ideas into successful economic and social innovations. The DOIT approach suggests mobilising makerspaces, within schools as well as for extracurricular activities, to empower primary- and secondary-school pupils, together with teachers and other facilitators, to develop innovative solutions for societal issues.

With regard to high-level socio-economic policies, the proposed focus on societal issues ties in with the Europe 2020 Strategy for Smart, Sustainable and Inclusive Growth (2010) and relates to European measures supporting social innovation and businesses. In recent years promoting social innovation and social enterprises has become a core goal of the European Commission (cf. Bureau of European Policy Advisers 2010; European Commission 2013). Measures fostering this goal started with the Social Business Initiative (2011) and can be found within several current programmes such as the Employment and Social Innovation Programme (2014–2020).

Social innovation and entrepreneurial competences, including a special focus on digital skills, also play an increasing role in educational policies and programmes. Among the four objectives of the ET2020 - Education and Training 2020 Framework of the EU member states, adopted in 2009, was “enhancing creativity and innovation, including entrepreneurship, at all levels of education and training.” The updated ET 2020 framework (2015) reinforces this objective and emphasises learning based on innovative open and digital educational methods (Council of the European Union 2009; Council & European Commission 2015).

As highlighted in the European Commission’s Communication on Opening Up Education (2013), ICT-enabled open educational practices and resources (OER) allow making learning opportunities more innovative, flexible and effective. Innovative open practices are a core element of the DOIT approach, including easy access to and use of OER by learners, both pupils and teachers/facilitators.

Recent key policy messages of the ET2020 Working Group on Digital Skills and Competences (2017) emphasise that educational institutions should help remove the digital skills gap in Europe by working together with local partners, including businesses, public services such as libraries, civil society associations and others. Local organisations which provide makerspaces with a focus on software tools, digital design and fabrication appear as excellent partners to tackle the digital skills gap, especially with regard to new digital business and employment opportunities.

In January 2018 the European Commission issued the Digital Education Action Plan in which Priority 1 is “Making better use of digital technology for teaching and learning” (European Commission 2018a). Beside still required efforts to ensure equity and quality of digital access and infrastructure across Europe, the priority emphasises the huge, largely untapped potential of digital technologies for improving education.

The Commission staff working document accompanying the Communication (European Commission 2018b: 3) under Priority 1 recognises that maker concepts “are increasingly finding their ways in different sectors of education as an innovative way to engage with digital technology from a design and inventor perspective. These practices are based on both technological developments and pedagogical innovation. At the same time, they provide a hint on how the infrastructure for educational purposes can be rich, varied and differentiated”.

55
3. Exploitable assets of the DOIT innovation action programme

DOIT implements an ambitious innovation action programme offering to educational and social innovators a range of activities and products to make a difference. This chapter gives an overview of the programme, describes exploitable assets of the programme, and addresses the question of how to sustain and exploit Open Education Resources (OER).

3.1 The DOIT innovation action programme

Figure 1 gives an overview of the DOIT innovation action programme:

The programme comprises regional makerspace pilots, provision of OER and training, a platform for sharing ideas and success stories, and other activities and products.

The DOIT programme empowers young people, together with educators and other facilitators, to use open innovation methods, digital maker and collaboration tools to tackle societal problems. Thereby young people can develop entrepreneurial mind-sets and skills for turning creative ideas into potential social innovations.

Moreover, the project runs roll-out activities (media, events, presentations) to disseminate the DOIT approach and mobilise stakeholder engagement to adopt and scale its application in the countries of the partners and across Europe.

The target in the medium to long term (10-year horizon) is learning outcomes that enable digital social innovation, businesses and employment of young people.
3.2 Overview of exploitable assets

Running the DOIT innovation action programme will generate a range of assets such as knowledge, products and services which DOIT partners can exploit beyond the project life cycle. Table 1 provides an overview of assets that will result from the project, including brief description and intended customers and users. It builds on, extends and details further an overview given at the beginning of the project (cf. DoA Annex 1, pp. 49-50).

<table>
<thead>
<tr>
<th>Assets</th>
<th>Brief description</th>
<th>Potential customers</th>
</tr>
</thead>
</table>
| **DOIT pilot actions**   | Pilot actions enact the DOIT approach of social innovation and entrepreneurial learning through practical activities in makerspaces. Partners are running 10 pilot actions with different established or temporary makerspaces and various themes (e.g., Living Together, Health & Well-being, Environment & Nature, Arts & Youth Culture). Special attention is devoted to social inclusion and sustainable use of resources. The learning journey of the participants spans the whole cycle from identifying a local issue to presenting a potential solution in public. How to organise and run such pilots is the most complex knowledge asset (expertise) of DOIT partners. The knowhow also includes how to evaluate pilot outcomes. | National/regional organisations interested in social innovation and entrepreneurship education  
• Innovative cities and regions  
• Makerspaces: FabLabs, Hackerspaces and others providing various tools (e.g. public libraries):  
• Funding bodies |

| **Makerspace setup**     | Many organisations interested in using maker activities for practice-based learning do not yet have a makerspace. The DOIT pilots include such cases in which temporary makerspaces are being used. How to set up such low-cost makerspaces for the learning programme is among the particularly useful knowhow of partners. | Organisations interested in an initial low-cost but extendable makerspace, e.g.  
• Schools and after-school centers  
• Libraries and museums  
• Community centers of civil society organisations |

| **DOIT facilitator training** | Effective application of the DOIT learning approach requires some training of facilitators such as educators and makerspace managers. Partners are training facilitators in regional workshops as well as online. The learning materials are freely available online (see below). However learners often prefer direct interaction with trainers or a blended approach combining face-to-face and online activities. | All mentioned above and  
• Teacher training organisations  
• Training programmes for librarians, museum educators, social workers |
<table>
<thead>
<tr>
<th><strong>Online course for facilitators (MOOC)</strong> [knowhow/expertise] [service/support]</th>
<th>The DOIT course is being offered on an established massive open online course (MOOC) platform. It allows the project to train a larger number of facilitators, including young people who serve as tutors. For the course resources from the facilitator’s toolbox are being used (see blow). The main assets here are the DOIT course concept and knowhow of partners (experience, lessons learned) from running the online course. Participants who complete the course get a DOIT certificate.</th>
<th>All mentioned above</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DOIT online toolbox for facilitators</strong> [products]</td>
<td>The toolbox is a set of open education resources (OER) for facilitators of DOIT learning programmes. The resources describe settings, methods and tools to foster (digital) social entrepreneurship activities of young people (&gt; 50 descriptions). The content is freely available under the CC BY license, hence can be re-used, combined with other material, etc.</td>
<td>All mentioned above and anybody else interested to facilitate early stage social innovation and entrepreneurial education of young people based on maker activities</td>
</tr>
<tr>
<td><strong>DOIT online toolbox for young social innovators</strong> [products]</td>
<td>The toolbox is a set of OER for young people interested in making and social innovation. The materials and templates are intended to help young people acquire and apply innovation and entrepreneurial skills for tackling social or environmental issues. Some resources are provided in versions for different age groups (6-8, 9-12, 13+ years). The content is freely available under the CC BY license.</td>
<td>Young people and all mentioned above who support maker, social innovation and entrepreneurial activities of young people</td>
</tr>
<tr>
<td><strong>DOIT open platform</strong> [service/support]</td>
<td>The platform provides educators and young people access to the DOIT toolboxes and supports navigating and using the OER on their learning journey.</td>
<td>DOIT learning programme facilitators and young social innovators</td>
</tr>
<tr>
<td><strong>DOIT (success) stories</strong> [products]</td>
<td>DOIT produces and publishes stories of innovative young makers meant to inspire others, especially by showing what children can achieve through creative making. Planned are 100 European success stories + 200 from the DOIT pilots and online competitions. The stories are being published under the CC BY license.</td>
<td>• Children, parents, educators and others who support innovative young makers • Media interested to re-publish and disseminate the stories</td>
</tr>
</tbody>
</table>
| **DOIT creative ideas and prototypes [products]** | Creative ideas and prototypes generated in DOIT pilot actions or by others and submitted to the DOIT online competitions for innovative young makers | Organisations interested to support the realization of ideas/prototypes, e.g.  
- Product developers  
- Social businesses  
- Start-up incubators  
- Foundations & other sponsors |
| **DOIT reports, papers and open data [knowhow/expertise] [products]** | DOIT researchers publish open access reports and papers on research results and lessons learned. In addition open research data as well as templates and guidelines will be made available, enabling others to carry out research and compare results on regions not covered by the project. | • Educational and social innovation research community  
• Interested practitioners engaged in the maker movement |
| **DOIT European policy briefs and Memorandum [products]** | The European policy briefs describe the rationale and results of the DOIT innovation action programme and give recommendations on how to step up early stage maker, social innovation and entrepreneurial education for young people.  
The Memorandum on Entrepreneurial Maker Education mobilises stakeholder engagement to adopt and scale the application of the DOIT approach in the participating countries and across Europe. | • Educational and social policy makers  
• Educational institutions  
• Social businesses / entrepreneurs  
• Civil society organisations  
• Innovative cities and regions  
• Public & private funders |

**Table 1: Overview of exploitable DOIT assets.**

The table gives an overview of exploitable assets including potential clients and stakeholders. Which partners may be positioned best for exploiting DOIT assets in certain ways is presented in Section 5.3.

### 3.2 DOIT OER exploitation

In line with the Consortium Agreement the DOIT project licenses all products of the DOIT learning programme under the Creative Commons Attribution (CC BY 4.0) license, which allows unrestricted re-use, except that the project and individual creators must be recognised. Not provided under this license, but CC BY-ND (NoDerivatives), is content such as images or videos showing children, which will not be considered here.

The open educational resources (OER) approach of DOIT supports the exploitation of other assets such as the expertise developed by partners in the project. For example, organisations or projects may ask for consultancy, training and support for implementing the DOIT learning programme. The open approach does not impede exploitation of the OER by partners, but makes it difficult because the products are freely available, there is no copyright protection, and others can try exploiting them as well. Therefore, strategies and business models need to be explored which might work in such a situation.

Below we present some interesting results from our survey of literature on OER business models, followed by an overview of business model options considered in the literature, and a summary of key points for the DOIT partners.
3.2.1 Literature review

The issue of how to sustain OER initiatives has been addressed by authors since about 15 years. Many publications present one or a few case studies while systematic description of OER business models and synthesis of what is known about their use has been surprisingly rare. It appears that many community/volunteer-based initiatives and available funding by governments and foundations and/or internal resources of educational institutions left little room for considering a wider range of feasible business models.

As an example, Petrides & Limes (2008) described six OER projects in different parts of the world of which only three considered long-term sustainability: One of three projects in the United States had the ambitious “business model” of establishing a fund of US$ 2.5 million in order to sustain from the interest their basic operation. Two projects in Africa were struggling to secure public or private grants without considering other options.

While side-lining as long as possible other or additional options to funding streams was the approach of many initiatives, some publications made clear that there are such options worth to consider. Business models suggested by these publications (highlighted with *) are summarized in Table 2 in the next section.

Still one of the best overviews of a wider range of OER business models can be found in Downes (2007: 34-36)*. Together with two other papers commissioned by the OECD Centre for Educational Research and Innovation (Dholakia et al. 2006; Wiley 2006) it provided a basis for a chapter on sustainability issues in the first major OECD report on OER (OECD 2007: 87-98). While the chapter urged initiatives to consider thoroughly their long-term sustainability, looking for different financing options, it did not address the full range of OER business options/models presented by Downes (2007).

Another publication relevant in this regard is by Guthrie et al. (2008) who described revenue generation options with a focus on online academic resources projects. Their report was for the not-for-profit organisation Ithaka (USA) which helps the academic community use digital technologies to advance research and teaching in sustainable ways: in 2014 Ithaka issued an update of the report (Maron 2014).

The overview by Guthrie et al. (2008: 26-53)* includes as direct beneficiaries pay options: Subscription or one-time payment, Pay-per-use, Contributor pays model: as indirect beneficiaries pay options: Host institutional funds/in-kind contributions, Corporate sponsorships, Advertisers, Build diverse streams of philanthropic funding, Leveraging content through licensing. The 2014 update in addition especially considers “freemium” models in which some resources are provided for free with the aim to move users to pay for added value products or services. This report also discusses some models in greater detail and includes short case studies on more recent examples (Maron 2014)*.

Stacey (2012)* described several examples of business options for an “economics of open”, and in 2015 launched an Open Business Model Canvas initiative inviting OER projects to develop and share a canvas, which was not a big success in the OER community (cf. Creative Commons 2015).

De Langen & Bitter-Rijkm (2012) and De Langen (2013) criticized that earlier attempts to identify a potentially sustainable OER business model, especially among revenue based models, ignored the complexity of such a model as revealed by Business Canvas Modelling. They suggest an OER exchange network with a central hub through which educational institutions share their OER, while benefitting from value network effects. The suggestion appears to be motivated by their background in the Open University Netherlands, which is a sustaining member of the Open Education Consortium. However, around that time according to Janssen et al. (2012) the university offered “open” only some short courses for marketing purposes: they present results of a survey on three OER levels the university might go for, 100%, 10% or stick to the current level.
Going beyond the usual methods of case studies, interviews and surveys, Okoli & Wan (2015)* employed the Delphi method to determine relevant business models for OER. In three Delphi rounds 19 experts in OER and online education identified 18 models of which they considered ten as relevant for OER.

In 2015, OECD’s Centre for Educational Research and Innovation again published a large report on OER as a catalyst for innovation. The report contains a chapter on how to secure the sustainability of OER initiatives (Orr et al. 2015: 109-126). It does not provide new insights but summarises well basic requirements and measures of success of four models: Community-based, Government/Philanthropy-based, Revenue-based (commercial), and an Institutional (hybrid) model, which uses OER to receive government or philanthropic support and/or attract more fee-paying students. The report presents examples for each model. Some examples illustrate a shift towards a mixed model, in particular community-based OER initiatives which added income generating methods to secure sustainability. The authors expect that OER provision will increasingly be based on mixed models.

Recently the International Council for Open and Distance Education (ICDE) conducted a large survey of how higher education providers from more than thirty countries across the world are using open online approaches to improve teaching and learning. The survey found that of 69 cases around 80% use some OER as a part of their course provision (Orr et al. 2018: 22).

The chapter on business models addresses five strategies which are based on their empirical data (Orr et al. 2018: 33-42). Understanding learning products and services as the core of education provision, especially in the case of open and distance learning providers, the following models are distinguished: “fixed core” (27 cases), “entrepreneurial with fixed core” (21), “entrepreneurial” (11), “outreach” (6) and “service-provider” (4). Furthermore the study distinguishes between defender- and prospector-like approaches with regard to seven dimensions of the business model: Products and services, Target group, Communication channels, Networks, Legacy or new value chain, Competitive advantage, Profitability and sustainability.

Educational institutions with a traditional fixed core, outreach or service-provider focus are seen as more defensive. But these may be innovative in some respects, e.g. target groups and new communication channels in the case of an outreach focus. In general, the study results suggest that the surveyed institutions “are particularly innovative around their core products and services, rather than being innovative with them”. (Orr et al. 2018: 42). Obviously, innovative activities around a fixed core are less risky than a more entrepreneurial, perhaps disruptive approach regarding the institutional core business. The 11 institutions with a distinct entrepreneurial approach demonstrate innovative strategies in the area of products and services combined with new target groups and communication channels, in other respects they are very diverse.

3.2.2 Overview of business models

In the literature of the OER community there is generally little consideration of exploitation of OER in a commercial sense. The reasons for this are that OER are usually provided to all learners openly and free of charge, and the assumption that such resources should be financed by public or philanthropic funds. Therefore the discussion focuses not on exploitation but how projects and institutions can sustain the provision of the OER, after they have been created based on some initial funding and/or a volunteering group of providers.

Table 2 gives an overview of business model options considered as suitable for OER in publications which address a wider range of options (Downes 2007, Guthrie et al. 2008, Maron 2014; Okoli & Wan 2015, Stacey 2012). Some of the options are not appropriate for the free OER but for added value products and services.
<table>
<thead>
<tr>
<th>Models/options</th>
<th>Brief description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community-based</td>
<td>In-kind contribution of content or support of activities by community members: the community of practice maintains and extends the OER (this model often depends on a few highly committed core people)</td>
</tr>
<tr>
<td>Institutional</td>
<td>An organisation assumes responsibility for maintaining the OER in-kind, aligned with their overall mission and core business. Education/training organisations can incorporate the OER as a free element of their otherwise paid or sponsored course offering</td>
</tr>
<tr>
<td>Governmental/NGO</td>
<td>Subsidies or grants by a governmental agency or larger NGO (such funding can be significant but is often unstable due to shifting policy priorities)</td>
</tr>
<tr>
<td>Philanthropic</td>
<td>Subsidies or grants by foundations, smaller donations by individuals (e.g. crowd-funding)</td>
</tr>
<tr>
<td>Endowment</td>
<td>Financial contributions by one or several parties to a fund, interest earned on the fund finances the OER provision</td>
</tr>
<tr>
<td>Membership</td>
<td>Annual contribution to a membership organisation (financial or an agreed amount of support work or service provision): the organisation manages the maintenance, extension and quality assurance of a shared OER collection</td>
</tr>
<tr>
<td>Partnerships</td>
<td>Exchange of complementary resources and knowledge among a small group of partners (less formal than a membership organisation)</td>
</tr>
<tr>
<td>Corporate sponsorship</td>
<td>Acknowledged support of an initiative by a company (financial support, cost-free use of services or other)</td>
</tr>
<tr>
<td>Advertisers</td>
<td>Paid advertising of third parties is placed on OER content (suitable advertisers must be well chosen: maybe ethical issues of exposing students to advertising)</td>
</tr>
<tr>
<td>Contributor pays</td>
<td>Is a model for open access academic publications not appropriate for individual OER contributors: institutional providers may pay for the hosting of larger amounts of OER</td>
</tr>
<tr>
<td>Consultancy, training and support</td>
<td>Concerns the use of the OER by third party service providers, for example organisations wishing to provide courses based on the DOIT learning programme</td>
</tr>
<tr>
<td>Courses</td>
<td>The OER is free but students (or sponsors) pay for the learning/training programme and certificate</td>
</tr>
<tr>
<td>Value added products or services</td>
<td>Users do not pay for the OER but added value, for example enriched formats, special tools or services (including courses): called freemium or conversion model if the provider actively uses the OER to convert users to customers of the value added products or services</td>
</tr>
<tr>
<td>Licensing value added content</td>
<td>Producers who add significant value to openly available OER (e.g. CC BY) can try to license the enhanced content to education/training providers</td>
</tr>
</tbody>
</table>

**Table 2: Overview of business model options for OER.**

There is no lack of business model options but each comes with specific requirements as well as advantages and disadvantages. Partners who consider certain options therefore are advised to consult the mentioned and other, more specialised literature on the models.

### 3.2.3 Summary of key points

From the surveyed literature the following key points can be summarised:

- OER are often produced based on one-off seed-funding from government or philanthropic donors, and need to develop sustainability strategies when this funding comes to an end.

- OER initiatives nowadays recognise that they cannot only count on public or private funding but at least need to develop a mixed approach, including appropriate other options (sometimes called “integrated” models).

- A variety of options for sustaining OER initiatives exists, but no “one-size-fits-all” approach because of the differences between initiatives regarding goals, types of OER, contexts (e.g. volunteers vs. institutional), etc.

- The perceived complexity of OER business models may have stimulated the recent popularity of Business Canvas Modelling in the community.

- It appears that more initiatives now consider the freemium or conversion model in which the OER is available for free while value added products or services must be paid: this model has often been rejected by OER advocates.

- What we called the basic exploitation principle for DOIT assets corresponds to this model. We assume that it can work well for partners to provide services related to the DOIT learning programme. The services can be consultancy, training and support, customisation of content and courses, programme evaluation, and others.
4. Market overview and developments

As outlined in the section on DOIT’s basic exploitation principle, the overall aim of the project consortium is to develop and disseminate as wide as possible a new approach of early stage social innovation and entrepreneurial education based on maker activities. A broad take-up of the approach by schools, makerspaces and other learning environments should allow young people acquire skills and mindsets as required by innovative social entrepreneurs/businesses, employees and engaged citizens. In turn, a broad take-up increases the potential of partners to generate income through providing related services (e.g. consultancy, training and support) or implementation projects sponsored by public and/or private funders.

4.1 Core market segments

While the overview of exploitable DOIT assets in Section 3.2 (Table 1) points to several groups of clients, two are core market segments:

- Makerspaces outside the educational sector, e.g. Fab Labs, hackerspaces and other makerspaces (e.g. in public libraries) that offer engagement and learning opportunities for young people as part of their activities, which most makerspaces do.
- Schools that already provide (few) or intend to develop makerspace-based learning, including related institutions and actors such as educational policy & administration and teacher education and training institutions.

These areas are core market segments because the DOIT approach focuses on children and youth (pupils/students aged 6-16 years), and makerspaces provide the environment and tools for the DOIT learning programme. In what follows we provide an overview of these market segments.

4.2 Makerspaces (outside of schools) with an educational component

For about 10 years the number of makerspaces has been growing steadily. The core drivers have been more easily available digital design and fabrication tools (e.g. 3D printing), mostly based on open-source software and hardware, and the “maker movement” which promotes Do-It-Yourself (DIY) making and sharing of tools and knowledge. Maker media, online sharing platforms and a wave of large maker fairs and weeks (e.g. European Maker Week) and local maker days have spread the spirit and practice of “making” worldwide.

Makerspaces can take different forms in terms of organisation, where they are established, available tools, and what is being produced. However, according to the literature they share some aspects, which include that a makerspace typically is:

- run by or on behalf of a local community or public institution,
- publicly-accessible, freely or based on a moderate membership fee,
- equipped with a variety of tools for creative work by like-minded people,
- promotes collaboration on projects and knowledge sharing, and
- includes educational activities with a focus on hands-on “learning by doing”.

64
Makerspaces is the general term for all creative environments that are based on maker principles. These comprise Fab Labs, Hackerspaces and various other makerspaces.

**Tabular overview**

Below we give an overview of the different makerspace types, including their main focus and numbers (worldwide, EU und DOIT partner countries). The figures for the individual DOIT partner countries are given in Section 5.2.

<table>
<thead>
<tr>
<th>Makerspace types</th>
<th>Focus</th>
<th>Main settings</th>
<th>Worldwide</th>
<th>EU28+ Serbia</th>
<th>DOIT partner countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fab Labs</td>
<td>Digital fabrication, 3D design &amp; printing, laser cutter and other tools</td>
<td>Members of the Fab Foundation network</td>
<td>1321</td>
<td>691</td>
<td>219</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(up from 128 in 2012)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hackerspaces</td>
<td>Programming, open HW/SW, electronics, sensors, robotics</td>
<td>Computer and programming centers, studios, clubs, etc.</td>
<td>1412</td>
<td>533</td>
<td>295</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(up from about 100 in 2009)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Makerspaces</td>
<td>Creative cultural and social engagement, using various digital and other tools</td>
<td>Community centers, libraries, museums, arts &amp; crafts groups</td>
<td>unknown</td>
<td>400 (estimate)</td>
<td>200 (estimate)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Will identify relevant ones</td>
</tr>
</tbody>
</table>

*Table 3: Overview of makerspaces (2018-12-03). Fab Labs and Hackerspaces based on [https://www.fablabs.io/labs](https://www.fablabs.io/labs) and [https://wiki.hackerspaces.org](https://wiki.hackerspaces.org) (those marked as active), own extraction and calculation, some double entries removed. Other Makerspaces: Estimate based on various sources; only makerspaces with relative intensive use of digital tools, not including traditional workshops (e.g. wood or metal working, repair workshops, etc.).*

Rosa et al. (2017) present an analysis of information on 826 makerspaces in the EU (397 Fab Labs, 327 Hackerspaces and 102 other). They collected the information from websites and social media pages in a database (status: December 2016) and analysed various aspects such as main interests, equipment, fees (membership or machine use), if any. The authors consider a “saturation” of makerspaces in the EU28 because their database shows a steady increase from 2007 to 2013 while from 2014 to 2016 there where not many new makerspaces (Rosa et al. 2017: 21-22). However, around 43% of their makerspace records lack the founding year and for several countries only two or three makerspaces are covered.

**Fab Labs**

Fab Labs are laboratories with a focus on digital design and fabrication using computer-controlled 3D printing, laser cutting and other tools. Our focus is on the members of the Fab Foundation network which must have a minimum core set of tools and agree to follow principles of openness and sharing of knowledge (Fab Charter). Such labs are often established by universities as spaces for education, research and innovation, or associations focused on creative digital fabrication, engaging and upskilling unemployed youth, and other functions.

Worldwide there were 128 Fab Labs in 2012, 186 in January 2014, 349 in June 2014, 547 in July 2015, 979 in October 2016 and 1,186 in October 2017 (Osunyomi 2015; Jackson 2016; Patty 2017). Our figures per 3 December
2018 of 1.321 Fab Labs worldwide, 691 in the EU28 plus Serbia, and 219 in the DOIT partner countries are based on extracting and calculating information from fablabs.io. Even if we assume that some Fab Labs are not operative there are many more such labs in the EU28 than covered by the database of Rosa et al. (2017, see above).

A number of studies provide insights in different facets and groups of Fab Labs, e.g. Rosa et al. (2018) based on many interviews with founders and managers of Fab Labs in Europe: Pauceau & Dempere (2018) surveyed 140 Fab Labs with an entrepreneurial focus: Ramella & Manzo (2018) analysed the development in France and Italy; OD&M project (2017) in Italy, Poland, Spain and UK, including also other digital fabrication centers: Osunyomi (2015) presents a survey including a comparison between FabLabs in developed and developing countries.

Hackerspaces

Hackerspaces are a much less homogeneous group than Fab Labs, which focus on digital fabrication, while hackerspace projects typically are developed based on programming open software and hardware, including circuits, electronics, and sensors: some projects also produce interactive digital media (e.g. games) or include digital fabrication (Moilanen 2012; Hielscher et al. 2015; Kostakis et al. 2015). Hackerspaces are different from the "hacklabs" of some free software developer groups in the 1980s and 1990s, which had an anarchist/autonomist orientation, whereas the current generation of hackerspaces combines open source & data and maker principles to advance civil society goals (Coleman 2013; Maxigas 2012).

In recent years the number of hackerspaces registered in the hackerspaces.org wiki has grown rapidly: there were 96 in March 2009, over 500 in 2012, and 1233 in early 2016 (Twenergy 2009; Moilanen 2012: Davies 2017). The figures per 3 December 2018 of 1412 active hackerspaces worldwide, 533 in the EU28 plus Serbia, and 295 in the DOIT partner countries are based on extracting and calculating information from the wiki. Between January 2016 and November 2018 over 600 records of hackerspaces have been “updated”, which means newly added or an existing record modified.

Providing learning opportunities in hackerspaces has benefited a lot from easy to use tools such as LilyPad Arduino, Raspberry Pi and others. However, hackerspaces have a wider scope than running coding courses for children such as the Code Club programme of the Raspberry Pi Foundation (Cambridge, UK) or courses of the CoderDojo Foundation (Dublin, Ireland), both provided by volunteers in many countries around the world. Which of the identified hackerspaces in the DOIT partner countries include social engagement and learning activities for young people will need to be analysed (examples in Croatia are described in Balač et al. 2016).

Other Makerspaces

Concerning other makerspaces no comprehensive overview is available. The Make: magazine (Make Media, USA), aims to provide “a world-wide directory” of makerspaces, but 395 of 507 entries are US-based, 31 makerspaces are located in Canada, 46 in Europe, 13 in South America and 12 in the Asian region (2018-11-28). For 85 of the 507 makerspaces the type is not given, while among the other self-assigned entries 111 Hackerspaces, 140 Collaborative Workshops and 58 Community Center Workspaces are the largest groups. Clearly the directory covers a different community than Fab Labs of which only few are present. Between Collaborative Workshops and Community Center Workspaces there is no clear distinction with regard to their organizational form. Most provide a range of shared tools while some focus on traditional arts & crafts or digital tools.

We are mainly interested in organisations that promote creative forms of cultural and social engagement and present a relative intensive, but not exclusive, use of digital tools. Such makerspaces could be good candidates for adopting and running the DOIT learning programme, perhaps in cooperation for schools. We estimate that there are some 400 in Europe set up by local community centers, libraries, museums and other public or civil society organisations. The estimate does not include traditional workshops, e.g. textiles, wood or metal working, repair cafés, etc.
We intend to identify at least those in the countries of the DOIT partners. What needs to be decided, however, is where to draw the line with regard to makerspace characteristics, use of digital tools, learning and innovation activities. For example, if digital tools can play a minor role some of the over 450 “Offene Werkstätten” (open collaborative workshops) in Germany could be relevant (Lange et al. 2016). The focus with regard to such collaborative workshops is on larger entities such as Dingfabrik Köln (Cologne, Germany), Green Garage (Vilnius, Lithuania), Orange Makerspace (Roskilde, Denmark) or Timelab (Ghent, Belgium).

Clear candidates in our survey are also makerspaces which since around 2014 have been set up by public libraries, in DOIT partner countries, for example, in the Rijeka City Library (Croatia), Tapiola Library (Espoo, Finland) or Cologne Public Library (Germany). (1001Libraries 2014; IFLA 2015, with examples also in Norway, Poland, Sweden and Russia). In the Maakplats 021 project in Amsterdam (2/2017-12/2019) DOIT partner WAAG supports the development of-makerspaces in at least 10 public libraries by training staff members in maker education and digital fabrication (WAAG 2017).

4.3 Emerging makerspaces in schools and related institutions

In schools around Europe the development of makerspaces is at an early stage. There are some pioneering schools and first pilot projects funded by ministries to explore and evaluate educational benefits. Based on our searches we assume that the Nordic countries (Denmark, Finland, Iceland, Norway and Sweden) are in a lead position regarding take-up of making as an educational practice. For example, among the over 10 school makerspaces in Norway one of a primary school is even a member of the Fab Foundation network (Vesala School, Ylikiiminki, Oulu).

In countries with a strong tradition of arts, crafts and vocational education in schools, workshops exist that can be redesigned to include digital maker activities. Where this is the case, such as in Scandinavia, schools will find it easier to integrate (digital) making in the curriculum. Another observation is a quite strong presence of primary schools, which may be explained by a higher flexibility of their curriculum for educational experiments. Furthermore, we found only weak links to innovation and entrepreneurial education, rather there appears to be an emphasis on arts & crafts and basic skills in STEM (Science, Technology, Engineering and Mathematics).

The European Schoolnet’s Open Book of Educational Innovation, a mapping of innovation initiatives in Europe published in November 2017, includes makerspaces under the category “Innovating pedagogical options and holistic changes”. The authors see a “significant uptake” of the maker approach in schools and give as an example the large pilot Maker@Scuola in Italy, which involves almost 100 nursery and primary schools. Indeed, piloting makerspaces in schools at a larger scale has already started in some European countries (Table 4):
### Table 4: Examples of pilot projects for school makerspaces in European countries.

<table>
<thead>
<tr>
<th>Country</th>
<th>Project</th>
<th>Type of school/s</th>
<th>Nr</th>
<th>Focus</th>
<th>Link &amp; literature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Italy</td>
<td>Maker@Scuola (2014-2018)</td>
<td>Nursery and primary schools</td>
<td>ca. 100</td>
<td>Use 3D design &amp; printing and other tools for creative projects</td>
<td>[<a href="http://www.indire.it/progetto/maker-a-scuola/INDIRE">http://www.indire.it/progetto/maker-a-scuola/INDIRE</a> 2017](<a href="http://www.indire.it/progetto/maker-a-scuola/INDIRE">http://www.indire.it/progetto/maker-a-scuola/INDIRE</a> 2017)</td>
</tr>
<tr>
<td>Sweden</td>
<td>Makerskola (2015-2018)</td>
<td>Nursery, primary, secondary and special education schools</td>
<td>30-40</td>
<td>How to turn traditional craft workshops into makerspaces, incl. programming and Internet of Things (IoT)</td>
<td><a href="http://makerskola.se">http://makerskola.se</a> Eriksson et al. 2016 and 2018</td>
</tr>
<tr>
<td>Denmark</td>
<td>Teknologi Forståelse/ Technology Comprehension (2017-2021)</td>
<td>Primary and secondary schools (lower secondary in the first phase)</td>
<td>13 (2017/18) 46 (2018-21)</td>
<td>Combines elements of design, fab-learning, programming and societal aspects of technology</td>
<td><a href="https://www.enu.dk/modul/teknologiforst%C3%A5else">https://www.enu.dk/modul/teknologiforst%C3%A5else</a> Tuhkala et al. 2018</td>
</tr>
</tbody>
</table>

In Denmark there has also been the FabLab@school.dk project (2014-2017) which introduced schools to digital design and fabrication for education (fab-learning) at the upper primary and lower secondary levels, i.e. students aged 11-15 years ([www.fablabatschool.dk](http://www.fablabatschool.dk)). The project was developed by the Child-Computer Interaction Group (CCiG) at Aarhus University together with three municipalities and funded by the Danish Industry Foundation (Iversen 2017; Bødker et al. 2017). It involved over 30 schools of which ten established a fab-learn laboratory. Each of the municipalities also established a central laboratory with digital equipment and trained staff to support the initiative. The project identified shortage of teachers with competences for fab-learning as the greatest challenge (Hjorth et al. 2016). Therefore an educational pilot course has been developed at Aarhus University as a master module (5 ECTS course) which 60 teachers and lab leaders completed until 2017.

Another noteworthy example regarding maker education is that the University of Teacher Education St.Gallen in Switzerland runs a makerspace with a focus on informatics. A videobook serves as a multimedia course guide and the practical exercises take place in the physical Makerspace RDZ Gossau ([www.digitalearwerkstatt.ch](http://www.digitalearwerkstatt.ch)). The ICT Competence Center of the University of Teacher Education Bern 2012-2014 trialled short-term 3D printing based projects in three primary schools ([https://3drucken.ch/schulprojekte](https://3drucken.ch/schulprojekte); experience report from one school in Zuberbühler 2015). Recently the University of Teacher Education Thurgau, together with the University of Applied Sciences St. Gallen, has implemented a pilot makerspace in one primary school ([https://www.makerspace-schule.ch](https://www.makerspace-schule.ch)).

In other countries, teacher education institutions and schools may still be undecided about how to offer makerspace-based learning. For example, in Austria the University College of Teacher Education Vienna and Happy Lab (a Fab Lab) in a project funded by the Austrian Research Promotion Agency (FFG) explored requirements of teachers for supporting such learning. Results of the FabLab@School project have been published (Berger & Scheidl 2016: Stelzer & Pollak 2016), but we could not identify follow-up activities.
4.4 Entrepreneurship Education in EU schools

The European Eurydice network has conducted a comprehensive survey of the situation of Entrepreneurship Education (EE) at the national and in some cases regional level (Eurydice 2016). The survey focused on EE in schools and covered many aspects, including policies, funding, guidelines and teacher training, among others. We summarise important general results as follows:

- Out of 38 national and regional educational systems across Europe only 11 had a specific EE strategy for schools, 18 a general one, and 9 no strategy at all. Specific EE strategies tend to link EE with broader objectives such as social entrepreneurship and innovation.
- More than three quarters of the systems did not have any regulations on EE in teacher education. Courses for some subject-teachers were mainly offered in continuing professional development, seldom in initial education and training.
- EE was most commonly present in upper secondary schools, integrated in subjects such as economics & business or social studies, which are often optional. At primary school level it is increasingly recognised as a cross-curricular objective.
- Over half of the systems had very few or no guidelines on particular teaching methods. Most often recommended were active learning and activities outside the classroom, while experiential learning was the least common.
- The weakest part is the assessment of EE learning outcomes where a specific approach is usually lacking. At most, some learning outcomes are assessed in relation to specific subjects where EE has been included.

The Eurydice report notes exemplary EE implementation in some systems and developments in others, but urges that for progress appropriate funding streams for EE are necessary. More funding seems especially needed for teacher training courses and support, enabling practical experiences of pupils, and evaluation of learning outcomes.

Important points for DOIT partners

Our conclusion from the Eurydice survey results is that the addition in recent years of EE to traditional curricula and forms of teaching and learning has not generated significant effects in most EU countries. Especially important with regard to the exploitation of DOIT assets in this context are the following points:

- The Eurydice report notes that the main support for EE in schools by national or regional authorities has been funding of teaching materials (17 countries/regions) and development of guidelines, sometimes supported by stakeholders such as foundations or businesses (12 countries/regions).
- In some countries/regions, private publishers and not-for-profit organizations develop teaching materials: e.g. Eurydice correspondents mentioned activity of private publishers in Denmark, Lithuania, Norway and Spain.
- Centres of expertise in EE topics supported by central authorities exist in 11 countries/regions, including countries of DOIT partners (Austria, Belgium, Croatia, Denmark, Finland and Spain).
- Finally, and most importantly, practical entrepreneurial experiences, where promoted, have been mainly realized in initiatives with external partners. The report does not provide an overview of such partners, but some examples we describe in Section 4.6.
In addition to these points, the current lack of assessment of EE learning outcomes in most countries deserves particular attention. It represents potential for the exploitation of knowhow in the evaluation of entrepreneurial learning initiatives.

4.5 Typical Entrepreneurship Education activities

DOIT develops, trials, evaluates and promotes a new approach of early stage social innovation and entrepreneurial learning. It is based on maker activities and for children and young people aged 6-16 years. Regarding the exploitation of the DOIT learning programme it is important to distinguish it from typical Entrepreneurship Education (EE) for pupils, within schools or extra-curricular, and tertiary and post-education programmes.

As a basis for the distinction, this section addresses typical forms of EE while other variants are discussed in the next section. Table 5 gives an overview of activities deemed appropriate for different age groups, including both 6-16 years and over. Not included are makerspace-based activities as these currently are not among the typical activities of the screened programmes.

<table>
<thead>
<tr>
<th>Age group</th>
<th>Educational level</th>
<th>Entrepreneurial stage</th>
<th>Focus of EE</th>
<th>Typical activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>6–8</td>
<td>Primary school</td>
<td>Basic awareness</td>
<td>Playful learning incl. basic understanding of business</td>
<td>Games, work together as a team, role play, e.g. as a trader</td>
</tr>
<tr>
<td>9–14</td>
<td>Primary, lower-secondary school</td>
<td>Advanced awareness</td>
<td>Activities incl. development of business knowledge</td>
<td>Identify a need, develop and present a potential solution, incl. how to finance/market it</td>
</tr>
<tr>
<td>15–19</td>
<td>Upper secondary school</td>
<td>Formative (pre-enterprising)</td>
<td>Business learning</td>
<td>As above, plus visit companies, run a “mini-company”, participate in a competition</td>
</tr>
<tr>
<td>20–25</td>
<td>Tertiary education (universities, polytechnics and others)</td>
<td>Budding (preparing for entrepreneurship)</td>
<td>Business development training</td>
<td>Identify a business opportunity, conduct a market intelligence/study, write a business plan</td>
</tr>
<tr>
<td>25–29</td>
<td>Post-education programmes</td>
<td>Emerging (trialing entrepreneurship)</td>
<td>Business creation, startup incubation</td>
<td>Business modelling, Pitching, Customer development, Lean start-up</td>
</tr>
</tbody>
</table>

Table 5: EE programmes and activities according to age groups & educational level. Entrepreneurial stages distinguished based on Potter et al. (2014: 19-21), but with further elaboration and examples.
As DOIT addresses children and young people aged 6–16 years we do not discuss here in any detail tertiary and post-education entrepreneurship programmes. In any case we exclude programmes for business development and start-ups, e.g. incubation/acceleration & investment programmes, which are not appropriate for our age group.

At tertiary education institutions such as business and engineering schools, EE programmes have been introduced for a relatively long time, intended as a step towards future business generation of students. Such programmes typically have a focus on business idea development, market studies, business plan writing and managerial knowledge supporting a potential venture. In recent years, course contents and teaching methods have become more varied (Sirelkhatim & Gangi 2015).

Regarding earlier entrepreneurship learning, the Eurydice survey in many countries found a lack of guidelines for teaching methods (and even less practical help), while various materials are being offered by educational centers, commercial publishers and others. It appears that in this situation schools often turn to recognised “brands” in EE such as BizWorld and Junior Achievement which in addition to course content provide guidance and support. For example, in the Netherlands one of the BizWorld programmes has been adopted widely for EE by primary schools based on funding and volunteering co-instructors from businesses.

Evaluations of EE programmes often report mixed results regarding intended effects in several respects such as attitudes, cognitive skills (e.g. managerial knowledge) and non-cognitive skills (e.g. leadership). For example in the case of BizWorld in the Netherlands an extensive randomised field experiment reported a positive, but insignificant, effect on pupils’ cognitive skills while a significant negative effect on entrepreneurial intentions, i.e. opening a business (Rosendahl-Huber et al. 2012).

Considering the age and life experiences of pupils, expectations such as raising entrepreneurial intentions seem inappropriate. For primary school and lower-secondary school pupils it takes years until they enter professional life and may at some point consider starting a business. Therefore the focus of early innovation and entrepreneurial learning activities should be on essential attitudes and skills, especially creative ways of thinking and doing, which pupils can carry forward into next stages of education, training and practical experiences.

### 4.6 Screening of courses and other formats

In order to better understand the market of programmes that support entrepreneurial learning of young people we screened programmes of different types of providers. The goal was of course not a comprehensive review but insights in the landscape of programmes and especially aspects of programmes DOIT partners should consider. The main criteria for inclusion in the sample were that the programme activities

- involve entrepreneurial learning with a more or less strong focus on social innovation/business,
- and are meant for children and young people aged 6-16 years.

The latter excludes programmes for business development and start-ups, e.g. incubation/acceleration & investment programmes, which are not appropriate for our age group. The selected programmes represent a spectrum ranging from courses for pupils/students to more open activities such as hackathons not tied to an educational setting. Also the duration and other aspects of programmes can be very different. The sections that follow present brief descriptions of selected examples of different categories of programmes. The final section summarises relevant findings of the screening for the DOIT partners.
4.6.1 National competence centers for EE

According to Eurydice in 11 European countries and regions there are centers for Entrepreneurship Education (EE) that are supported by national or regional authorities (Eurydice 2016: 101-102). These act as centres of expertise on the teaching of EE, provide guidance material, conduct or commission studies, and disseminate information through their website. EE courses are mostly provided in cooperation with educational institutions and other programme partners (e.g. national branches of JA - Junior Achievement).

The countries/regions with such a centre mentioned in the Eurydice report include DOIT partner countries: Austria, Belgium, Croatia, Denmark, Finland and Spain. The following list takes account of recent changes:

- Austria: EESI-Impulse Centre (Entrepreneurship Education for School Innovation), [www.eesi-impulszentrum.at](http://www.eesi-impulszentrum.at)
- Belgium (Flemish Region): VLAIO (Vlaamse Jonge Ondernemingen), [www.vlajo.org](http://www.vlajo.org)
- Belgium (Walloon Region): Agence pour l’Entreprise et l’Innovation (AIE), [www.aei.be](http://www.aei.be)
- Croatia: South East European Centre for Entrepreneurial Learning (SEECEL), [www.seeCEL.hr](http://www.seeCEL.hr) (also supports EU accession candidates, e.g. Serbia)
- Denmark: Danish Foundation for Entrepreneurship, [http://eng.ffte-ye.dk](http://eng.ffte-ye.dk)
- Spain: The Autonomous Communities commission organisations to act as EE competence centres, e.g. in Catalonia the Xarxa d’emprendedoria in Cataluna, [http://xarxaempren.gencat.cat](http://xarxaempren.gencat.cat)

Example: EESI-Impulse Centre and IFTE, Austria

In Austria, the EESI-Impulse Centre (Entrepreneurship Education for School Innovation) is the centre of expertise for EE, supported by the Federal Chancellery. Since 2011, the centre has run the EESI Entrepreneurship Certification for Schools programme, which promotes entrepreneurial learning in all subjects as well as an integrated part of school life. EESI consultants at the regional level coordinate project groups on entrepreneurship. EESI also provides materials for schools and teachers that have been developed in cooperation with the association Initiative for Teaching Entrepreneurship (IFTE). The association has also been a partner in the large-scale Erasmus+ project YouthStart - Entrepreneurial Challenges and supports the Starte dein Projekt (Start your Project) programme (see below). – Sources: EESI-Impulse Centre, [www.eesi-impulszentrum.at](http://www.eesi-impulszentrum.at) and Initiative for Teaching Entrepreneurship (IFTE), [www.ifte.at](http://www.ifte.at)

Example: Danish Foundation for Entrepreneurship, Denmark

The Danish Foundation for Entrepreneurship has been established in 2010 by an inter-ministerial partnership between four ministries as the national knowledge centre and focal point for the development of entrepreneurship teaching at all educational levels. Among other activities the Foundation provides courses for students in secondary schools and training programmes for other young people. The “Company Programme” for students is a learning-by-doing course to develop good ideas in any field, from technical products to social innovation: “Next Level” is a project-based course that goes from idea to implementation, including a competition as part of the programme: the “Start Up Programme” aims to strengthen students’ entrepreneurial skills and includes a competition and presentation to business people. Schools can apply for project grants and there are also grants available for young people with a business/startup idea. – Source: Danish Foundation for Entrepreneurship, [http://eng.ffte-ye.dk](http://eng.ffte-ye.dk)
4.6.2 International providers of programmes for schools

Leading international providers with a portfolio of different courses for schools, teachers and pupils/students are:

- Aflatoun - www.aflatoun.org
- BizWorld.org - https://bizworld.org
- JA - Junior Achievement - www.ja-europe.org

Example: Aflatoun International

Aflatoun International provides three entrepreneurial learning programmes, Aflatot (3-6), Aflaton (6-14), Aflateen (15-18). The programmes support teaching children and young people for financial independence and project planning (saving, budgeting, management) and encourage them to use their creativity to generate their own income. Aflatoun works on a social franchise model and currently has 192 partners in 102 countries reaching over 73,000 active teachers. Partners can adapt the course material to fit local circumstances or to complement their existing programmes. Regional and national versions of the programmes have been created in 45 languages and adapted to complement programmes for tackling various issues such as disabled learners and girls’ empowerment, for instance.
  – Sources: Kwauk et al. 2016 (case study): samples of Aflatoun’s standard learning materials can be downloaded at: https://www.aflatoun.org/method/curricula/

Example: BizWorld

Started in the late 1990s in the United States, today BizWorld.org is a global provider of programmes for primary and lower secondary school pupils in many countries around the world. In the 2016-2017 school year, BizWorld.org programmes were taught in over 2,400 classrooms to more than 68,000 children. They can also be used in settings such as after-school learning or summer camps. The three programmes are intended to teach pupils valuable lessons about entrepreneurship, business, and financial responsibility while emphasizing key skills like collaboration, creativity, critical thinking, and leadership. Beside the core BizWord programme (grades 3-8) there is also BizWiz for teaching children (grades 5-8) the basics of money management and investing, while BizMovie (grades 3-8) focuses on entrepreneurship and business while encouraging the pupils to explore technology by creating animated movies.

The core BizWorld programme is now BizWorldPRO, previous versions have been discontinued in January 2018. The “next generation” version includes more digital components with regard to course management, content and evaluation. BizWorldPRO is a fully-guided blended-learning programme with a project-based approach: pupils typically work in teams of six. It comprises seventeen 45-60 minute sessions, 17-20+ hours in total. The programme description presents a long, maybe too ambitious list of what pupils do and can learn in this timeframe. It includes items from “Learn basic business vocabulary” to “Create company identity and a business plan” and “Pitch to venture capitalists and sell stock in exchange for initial funding”. Among the creative items for example are “Design product ideas and create prototypes” and “Manufacture all products”. – Sources: BizWorld.org, https://bizworld.org/BizWorldPRO and https://bizworld.org/transition-to-bizworldpro

Example: JA - Junior Achievement

JA - Junior Achievement (founded 1919) is a NGO that provides experiential learning in financial literacy, work readiness, and entrepreneurship to young people through branches in over 100 countries. In 2017, in Europe JA had 41 member organisations with 1,118 staff working with 146,917 volunteers and 116,464 teachers to provide such learning to students in 37,328 schools.

Among the JA - Junior Achievement programmes four are relevant for comparison to the DOIT learning programme:
• **Our Community**, for pupils aged 8-10: Is a fun and interactive series of 5 lessons on how businesses operate within a community presented by a business volunteer to a whole class. In the lessons the kids assess the needs and wants of different communities and are encouraged to take responsibility for a community.

• **It’s My Business!**, for students aged 13 to 15: Has six interactive sessions (60 minutes each), focused on entrepreneurs/entrepreneurship and fostering skills in social studies, critical thinking, and writing. Detailed course plans and materials are packaged in a self-contained kit for teachers, students and volunteers.

• **Economics for Success**, for students aged 13 to 15: Six sessions with a business volunteer, focused on economics, personal finance and students’ education and career options based on their skills, values and interests.

• **Company Programme**, for students aged 15-18: Challenges students to solve a problem in their community through a business venture. During one academic year they learn how to take a business idea from concept to reality, discovering first-hand how a company functions. Business volunteers are involved to share their experience and mentor. This is JA’s flagship programme. In the 2016-2017 school year, in Europe over 350,000 students enrolled in the programme.


4.6.3 Programmes for municipal youth and social work

Programmes in this group are developed municipalities to support entrepreneurial ideas of youth or to mobilize and train young people for neighbourhood and other social change projects. We briefly describe two examples for which case studies are available:

• Sommarlovsentreprenör (Young Summer Entrepreneurs), Technichus Science Center, Sweden, [www.sommarlovsentrepreneur.se](http://www.sommarlovsentrepreneur.se)

• Young Leaders, Dutch National Youth Council, Netherlands, [www.njr.nl](http://www.njr.nl)

**Example: Sommarlovsentreprenör, Sweden**

Sommarlovsentreprenör (Young Summer Entrepreneurs) is a 3 weeks programme in the summer period offered by some 40 municipalities and other providers across Sweden. It allows hundreds of young people (aged 15-20 years) to develop business ideas, guided by trained youth counsellors. The programme is being managed and licensed by Technichus Science Center: municipalities and other providers can apply for a license to run the programme in their local area. – Sources: Conradsen 2017a (case study): [www.sommarlovsentrepreneur.se](http://www.sommarlovsentrepreneur.se) (in Swedish): [https://www.youtube.com/watch?v=spEdpocOvMQ](https://www.youtube.com/watch?v=spEdpocOvMQ) (with subtitles in English).

**Example: Young Leaders, Dutch National Youth Council, Netherlands**

The Young Leaders programme has been developed and implemented since 2011 by the Dutch National Youth Council (Nationale Jeugdraad) in cooperation with seven municipalities, the Dutch Ministry of the Interior and four foundations. It is a training course for young people (age range: 15-25 years) in vulnerable municipal areas aimed to help them make their neighbourhood a better place and become role models for peers in this regard. The programme consists of 10 training modules, 2.5 hours each, which are designed to move the participants outside their comfort zone and learn and apply skills for their projects. In the courses groups of 15-20 young people participated and the overall completion rate was 80%. – Sources: Conradsen 2017b (case study): [www.njr.nl](http://www.njr.nl) (note: the current information on the Council’s website is for their changemaker programme).
4.6.4 Engagement by foundations, associations and businesses

This group comprises entrepreneurial engagement programmes of various developers and sponsors including social businesses, educational organisations, event organisers, private foundations and charities, among others. Typical elements of such programmes are ideas workshops and competitions. In some programmes people from the business world play a significant role as mentors or coaches.

- **Baut eure Zukunft (Build your Future), Social Impact and Deutsche Bank Stiftung, Germany**, [www.baut-eure-zukunft.eu](http://www.baut-eure-zukunft.eu)
- **Jugend Hackt (Youth Hacks), Open Knowledge Foundation and Medialepfade.org, Germany**, [www.jugendhackt.org](http://www.jugendhackt.org)
- **Starte dein Projekt (Start your project), Erste Financial Life Park and Initiative für Teaching Entrepreneurship, Austria**, [www.starteineinprojekt.at](http://www.starteineinprojekt.at)
- **Solas Business, Solas Project (charity), Dublin, Ireland**, [https://solasproject.com](http://https://solasproject.com)

**Example: Baut eure Zukunft, Germany**

Baut eure Zukunft (Build your Future) is a programme started 2017 by Deutsche Bank Stiftung and Social Impact, a not-for-profit company with social impact labs and social start-up programmes in Germany, Austria and Switzerland. The programme focuses on social innovation/change skills and has been developed for secondary school students and youth centers. It offers a set of downloadable materials on relevant themes (e.g. future anxiety, poverty, violence), creative methods, videos and worksheets. The website mentions that the material is meant for work of 6 hours. This seems to be the effort of the teachers/facilitators while students will need to invest much more time on their projects. Student teams that have developed a project can submit it to a competition. Teams of outstanding projects are invited to develop in a 2-day challenge event creative ideas for one of the 17 UN Sustainable Development Goals (which one is not revealed before the competition). Each team of 4 participants is supported by a coach and a mentor. A jury selects the winners who receive a financial reward to further develop their projects (first place: € 10.000, second: € 5.000, 3rd placed € 500 each). – Source: [www.baut-eure-zukunft.eu](http://www.baut-eure-zukunft.eu)

**Example: Jugend Hackt, Germany**

The Jugend Hackt (Youth Hacks) events have been organised since 2013 in Germany by Open Knowledge Foundation Deutschland and medialepfade.org (one of the DOIT partners). The Jugend Hackt programme aims to “improve the world with code”. Young people between 12 and 18 years work together with volunteering mentors on concepts and digital tools for a better society. A handbook that explains the programme concept and methods can be downloaded from the project website. The website also highlights the code of conduct of Jugend Hackt which promotes respect, openness, diversity, and engagement for a better world. Scientific evaluations in 2014 and 2015 confirmed positive effects of the programme. In 2018 Jugend Hackt weekends took place in eight German cities with a total of 400 young people working on 89 projects. Videos of project presentations illustrate outcomes. Thanks to volunteering and sponsoring by organisations and individuals (crowdfunding) Jugend Hackt could be regularly extended to meet the demand and will also take place in 2019. – Source: [https://jugendhackt.org](http://https://jugendhackt.org)

**Example: Starte dein Projekt**

The programme has been developed in a cooperation of Erste Financial Life Park ([www.financiallifepark.at](http://www.financiallifepark.at)), IFTE - Initiative für Teaching Entrepreneurship and partners from the educational sector. Since 2014 the programme helps teams of students (14+ years) realize their project ideas. It comprises free 3-hours thematic workshops on business models, project management, and crowdfunding, led by young entrepreneurs (300 workshops with over 8000
students since 2014/2015): a workbook for entrepreneurial thinking (Innovations-Sparbuch) including worksheets and information about grants, competitions, etc.; and a crowdfunding platform where the students can present and get support for their project. – Sources: See the information-rich programme website, especially the learning materials available at: http://www.startedeinprojekt.at/informaterial/

Example: Solas Business, Dublin, Ireland

The Solas Business programme of the charity Solas Project since 2013 promotes teamwork, creativity, business knowledge and entrepreneurial thinking of pupils in Dublin (in 2016: 15 schools of which 12 primary schools). The programme pairs each school with a business that provides coaches who work with the kids for a period of five weeks. The pupils are asked what problem they are facing and tasked to create a solution to address it. The pupils also present the solution to a jury of the Solas Business community. Among the winners for example are social companion robots (Clever Bots) or a solution that monitors a child's surroundings and makes it feel safer (BullyBug). – Sources: Kitcher & Hill-Dixon 2017 (case study); blogs on Solas Business Community Finals in 2017, https://solasproject.com/blog/

4.6.5 Screening summary and key points for DOIT partners

General results

*Key role of national centres of expertise:* Such centers promote teaching of EE, provide guidance material, conduct or commission studies, and disseminate information through their website. EE courses are often provided in cooperation with educational institutions and other programme partners (e.g. national branches of JA - Junior Achievement).

*Strengthen relations with such centres:* To promote the take-up of the DOIT learning programme and offer related expertise and services DOIT partners should establish or strengthen existing relations with these centres and similar organisations.

*Entrepreneurial school:* In addition to teacher training and courses for pupils/students, there is the important concept of “entrepreneurial schools”. Cooperation of schools with makerspaces could fit well with this concept. DOIT partners could promote, coordinate and support such cooperation.

*Involvement of business people:* Is present in most programmes, from a minor role as competition jury members, to volunteering as presenters or mentor (e.g. in JA’s programmes), up to serving as coaches in the five-week Solas Business programme. In the concept of the DOIT learning programme ways to involve (social) entrepreneurs/businesses may need to be elaborated more than at present.

Leading providers - general results

*Openness:* The course materials are a core asset of the major providers and therefore not openly available.

*Business as the core of courses:* Leading providers of extra-curricular programmes for students (Aflatoon, BizWorld, Junior Achievement) generally have a business-oriented approach. Business-savvy entrepreneurial people are in high demand, and these programmes cater to this demand.

*Financial literacy:* Programmes for kids have a strong focus on financials, e.g. personal finance. Results of the OECD PISA test of financial literacy in 2015 have shown that one in four students aged 15 are unable to make simple decisions on everyday spending, and only one in ten understands more complex financial tasks.
Therefore this is an import topic in Europe and elsewhere (JA Europe & Visa 2016). The DOIT learning programme could benefit from including some basics of costing and financing.

A surprisingly strong presence in schools: In 2017, in DOIT partner countries JA programmes were taught in Austria in 150 schools, Flemish Belgium 926 and French Belgium 286 schools, Denmark 1,179, Finland 674, Germany 1,363, Lithuania 349, Netherlands 572, Serbia 313, Slovenia 28 and Spain 868; not present was JA in schools in Croatia (JA Worldwide 2018: 18). Figures for Aflatoun and BizWorld.org will be collected.

Leading providers - other important points

Making: The BizWorld core programme BizWorldPRO includes making products created from simple craft materials. JA and Aflatoun seem not to include such an activity in their programmes. The BizWorldPRO programme is relatively short, 17-20 course hours, and comprises many activities. Therefore making is unlikely to be a core activity. Nevertheless it would be interesting to know how making is integrated in the course programme.

Community aspects: The JA “Our Community” programme has an interesting approach of making kids aware of local communities needs and taking responsibility for a community. In DOIT, identify and make something that is needed.

Content packaging: The leading providers demonstrate a good understanding of the needs of teachers and other facilitators of children’s learning. Course plans and learning materials are also packaged in self-contained kits providing what teachers, pupils and volunteers need for the course activities. The DOIT “toolboxes” should be evaluated and perhaps more adapted in this regard.

Course management: BizWorldPRO has increased the digital side of their blended learning model, especially the course management for teachers/facilitators. The DOIT learning programme management could be more digital too.

Franchising: The social franchise model and conditions of Aflatoun merit a closer look. Franchising is being used widely by social businesses and could also be relevant for the DOIT learning programme.

Entrepreneurial programmes for municipal youth and social work

Different contexts: Some municipalities in Europe have taken a keen interest in makerspaces as they foster creative, social and entrepreneurial skills of young people. However, different goals and contexts of youth work, social work and other activities supported by municipalities should be considered.

Social workers: Social work organisations have only recently entered the field of entrepreneurship programmes because social workers tend to have strong reservations regarding such activities (Andersen & Fröhlich Høgaard 2017a: Pan tea et al. 2014).

Youth workers: Youth work organisations and centers generally welcome activities involving creativity and hands-on work of children and young people. However, there is an abundance of such programmes and partners need to consider thoroughly how to position the DOIT learning programme in this field.

Engagement by foundations, associations and businesses

Mushrooming of engagement programmes: Ever more programmes and events invite young people to develop and submit creative ideas to challenges and award competitions organised by foundations (e.g. bank
foundations), social businesses, event organisers and others. DOIT partners will need to consider how to position the DOIT learning programme and other assets in this context.

Avoiding patterns of competition: The engagement programmes tend to create a competitive environment whereas the DOIT programme promotes co-creation, sharing and other maker principles. Replicating patterns of competition, winning and losing teams, etc. generally does not fit with the DOIT spirit.

Format development: Some programmes adopt the hackathon format. The DOIT learning programme shares some features with this format while other aspects are different. It might be worth exploring how the DOIT programme could be more hackathon-style, and vice versa.

Coding vs. social hacking/making: Some programmes aim to develop coding/programming skills of children and young people while also claiming more far reaching goals, e.g. Jugend Hackt’s “improve the world with code”. Regarding the more ambitious goal, such programmes could benefit from social innovation and entrepreneurial learning elements of the DOIT programme. The same applies to fab-learn courses such as those provided by Fab Academy and others with a focus on STEM learning.
5. Exploitation scenarios

5.1 Makerspace-based learning in education: general scenario

In the literature maker education is generally understood as the development of creative, technical and social skills through making things, building on shared knowledge, designs and tools. Pioneering schools have adopted a maker education approach however often with a narrow focus on STEM learning. The DOIT learning programme offers a different, arguably more beneficial maker education approach including social innovation and entrepreneurial learning.

In Chapter 4 we presented the current situation and figures regarding makerspaces, including Fab Lab, hackerspaces, other makerspaces outside the educational sector (e.g. in public libraries, community centers); furthermore pioneering makerspaces in schools and some first larger national pilot projects. Referring to the described situation and developments, we expect that within the next 5-10 years, the following will take place (general scenario):

- Many of the existing and new makerspaces outside the educational sector will expand their learning offer (as a social service as well as for income);
- More national and regional pilot projects will set up makerspaces in schools to explore and evaluate educational benefits;
- The educational sector will face bottlenecks to implement many more makerspaces, e.g. tight budgets, training required for teachers, etc.:
- Therefore educational agencies will work together with existing makerspaces to provide regular programmes for schools and teacher training.

The expected development will open up opportunities for partners to offer the DOIT learning programme to organisations involved in the development, including different makerspaces (FabLabs, hackerspaces, public libraries and others), teacher training organisations, primary and secondary schools, municipalities, and others.

In order to exploit these opportunities by providing consultancy, training and support, customized course content, etc., partners will have to convince the organisations of the advantages of the DOIT programme compared to other offerings which include making activities, which typically focus on STEM learning.

5.2 Makerspaces in DOIT partner countries

In Section 4.2 we presented current figures of makerspaces worldwide and in the EU-28. Table 6 gives the figures for makerspaces in DOIT partner countries. The figures for makerspaces other than Fab Labs and Hackerspaces are estimates and for makerspaces outside the educational sector (e.g. public libraries, community centres/ workshops, and others).
### DOIT Deliverable 7.3 “Dissemination and Exploitation Report”

<table>
<thead>
<tr>
<th>DOIT countries</th>
<th>Fab Labs</th>
<th>Hackerspaces</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>12</td>
<td>17</td>
<td>10</td>
</tr>
<tr>
<td>Belgium</td>
<td>24</td>
<td>22</td>
<td>15</td>
</tr>
<tr>
<td>Croatia</td>
<td>1</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>Denmark</td>
<td>7</td>
<td>14</td>
<td>10</td>
</tr>
<tr>
<td>Finland</td>
<td>7</td>
<td>14</td>
<td>10</td>
</tr>
<tr>
<td>Germany</td>
<td>58</td>
<td>155</td>
<td>65</td>
</tr>
<tr>
<td>Lithuania</td>
<td>2</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Netherlands</td>
<td>38</td>
<td>26</td>
<td>25</td>
</tr>
<tr>
<td>Serbia</td>
<td>5</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Slovenia</td>
<td>3</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Spain</td>
<td>62</td>
<td>29</td>
<td>45</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>219</td>
<td>295</td>
<td>200</td>
</tr>
</tbody>
</table>

The figures indicate that there is still much scope for more makerspaces in most countries: countries with currently few may present an opportunity for partners to engage directly in the development of makerspaces. However, this is only one of many ways partners can try to exploit assets developed or extended in the DOIT project.

### 5.3 Potential exploitation of assets by project partners

DOIT builds on an exploitation model in which the initial materials of the learning programme are made available freely and openly (under the CC BY license). This does not impede exploitation activities of the project partners. Rather, the more organisations intent to adopt the DOIT learning programme the higher is the potential of the partners to generate income by providing related services (e.g. consultancy, training and support, customisation of learning content) as well as funded implementation and evaluation projects. For such activities the partners will also benefit from the recognition and trust built based on the open approach as well as the networks developed or extended in the course of the project.

Table 7 gives an overview of exploitation options of project partners per DOIT asset, including details of the form of exploitation, customers and user groups, and partners who may be positioned best for the exploitation. On the assets more detailed information is provided in Section 3.2, Table 1.
<table>
<thead>
<tr>
<th>Assets</th>
<th>Potential exploitation</th>
<th>Individual partners</th>
</tr>
</thead>
</table>
| **DOIT pilot actions** [knowhow/expertise] | How to organise and run such pilots is the most complex knowledge asset (expertise) of DOIT partners. The knowhow also includes how to evaluate pilot outcomes.  
Form of exploitation: Consultancy services and funded implementation projects.  
User groups and stakeholders, e.g.:  
  - National/regional organisations interested in social innovation and entrepreneurship education  
  - Innovative cities and regions  
  - Established makerspaces, including FabLabs, Hackerspaces and others providing various tools (e.g. public libraries)  
  - Funding bodies                                                                                           | All DOIT pilot partners  
Markerspace facilities and/or special expertise have:  
Fab Labs - IAAC, POLY, UZAF  
Hackerspaces - ZAK  
Public libraries: WAAG  
Educational centres - CoC, eduC, MEPF  
Evaluation - SRFG, ZSI and other partners                                                                            |
| **Makerspace setup** [knowhow/expertise] | Many organisations interested in the DOIT learning programme will need knowhow for setting up an initial but extendable makerspace.  
Form of exploitation: Consultancy and support  
User groups and stakeholders, e.g.:  
  - Schools and after-school centers  
  - Libraries and museums  
  - Community centers of civil society organisations                                                                     | Partners setting up low-cost temporary makerspaces in their DOIT pilots - LUT, SRFG and ZSI  
Also all partners with own makerspaces have the required expertise                                                      |
| **DOIT facilitator training** [knowhow/expertise] [service/support] | Effective application of the DOIT learning approach requires some training of facilitators such as educators and makerspace managers.  
Form of exploitation: Customized training services, online/MOOC or blended (workshops + online)  
User groups and stakeholders, e.g.:  
  - All groups mentioned above +  
  - Teacher training organisations  
  - Training programmes for librarians, museum educators, social workers and others  
Participants who complete the course get a DOIT certificate                                                                 | Partners with a focus on education, training and professional development - CoC, eduC, LUT, MEPF  
Partners who often train users of their makerspaces - IAAC, UZAF, WAAG and ZAK                                                                 |
| DOIT online toolbox for facilitators [products] | The open education resources (OER) of the toolbox describe settings, methods and tools to foster (digital) social entrepreneurship activities of young people. The OER are freely available under the CC BY license.  
Form of exploitation: Incorporation into existing education, training and professional development programmes; possibly modification for provision in other formats (e.g. customized e-book, website, mobile app)  
User groups and stakeholders: All interested to facilitate early stage maker, social innovation and entrepreneurial training and activities | Partners with a focus on education, training and professional development (as above) |
| DOIT online toolbox for young social innovators [products] | The toolbox is a set of OER designed to help young people acquire and apply innovation and entrepreneurial skills for tackling social or environmental issues. The OER are freely available under the CC BY license.  
Form of exploitation: Customized engagement and training programmes; possibly modification for provision in other formats (e.g. e-book, game, mobile app).  
User groups and stakeholders: Young people and organisations that support maker, social innovation and entrepreneurial activities of young people. | Partners with a focus on engagement and training of young makers and innovator - CoC, eduC, MEPF, YPA  
Partners who often train young people as part of makerspace activities - IAAC, UZAF, WAAG and ZAK. |
| DOIT (success) stories [products] | The collection will comprise 300 stories of innovative young makers from around Europe (Licensed CC BY).  
Form of exploitation: Re-use and additions for other publications (e.g. e-book, side content of web articles, mobile information).  
User groups and stakeholders: Own re-use and media interested to disseminate stories. | All partners |
| **DOIT open platform**  
(service/support) | The platform provides educators and young people access to the DOIT toolboxes and supports navigating and using the OER on their learning journey.  
Form of exploitation: Extension and marketing of the platform for relevant value-added services, content and tools of other providers  
User groups and stakeholders, e.g.:  
• Providers of training and support services,  
• Educational publishers and services,  
• Providers of digital maker tools and services  
• Sponsors and organisers of crowdsourcing campaigns, e.g. creative ideas challenges | LUT as platform developer & provider and other partners as stakeholders and users |
| **DOIT creative ideas and prototypes**  
(products) | Creative ideas and prototypes generated in DOIT pilot actions or by others and submitted to the DOIT online competitions.  
Form of exploitation: DOIT as trusted broker between innovative young makers and organisations interested to support the realization of ideas/prototypes: partners as supporters and possibly co-developers or sponsors/investors.  
User groups and stakeholders:  
• Young makers and innovators  
• Product developers  
• Social businesses  
• Start-up incubators  
• Public & private sponsors | LUT as DOIT platform provider (brokerage service, cooperation with third party platforms for managing challenges, crowdfunding, etc.)  
Partners providing knowledge transfer and support to innovative young makers, developers and social businesses - ESI, SRFG, WAAG, YPA, ZSI |
| **DOIT reports, papers and open data**  
[knowhow/expertise]  
[products] | Open access publications on research results and lessons learned, and open data as well as templates and guidelines.  
Form of exploitation: Use of lessons learned and data for evidence-based consultation of organisations and policy makers. Re-use for further research on DOIT topics.  
User groups and stakeholders: Research community and practitioners in maker education and social innovation | Partners with a focus on research and knowledge transfer - ESI, LUT, SRFG, UZAF, WAAG, ZSI |
| DOIT European policy briefs and Memorandum [products] | The briefs describe the rationale and results of the DOIT innovation action programme and give recommendations on how to step up early stage maker, social innovation and entrepreneurial education in Europe. The Memorandum mobilises stakeholder support for this goal. Form of exploitation: Dissemination of the briefs and mobilization of stakeholder commitment, including adoption of the DOIT learning programme. User groups and stakeholders, e.g.:  
* Educational and social policy makers  
* Educational institutions  
* Social businesses/entrepreneurs  
* Civil society organisations  
* Innovative cities and regions  
* Public & private funders | All partners support the dissemination of the briefs and mobilize stakeholder commitment through their networks |

Table 7: Overview of envisaged exploitation of DOIT assets by project partners.

The DOIT project will run until end of September 2020, hence the partner organisations still have quite some time to consider and explore relevant exploitation options which fit with their mission and plans for the future.

Therefore we do not present and discuss here potential exploitation scenarios for individual partners. However, we note that platforms are available for different exploitation related activities partners may want to include in their scenarios. This includes:

- Providing a Massive Online Open Course (MOOC)
- Crowd-sourcing, e.g. creative ideas of pupils/students,
- Managing a challenge/competition, e.g. an award for social innovative projects of students
- Crowd-funding, e.g. fund the realisation of an innovative prototype.

Just to emphasise the obvious, there is little ground for DOIT partners to implement any of these platforms themselves for the purpose of exploiting DOIT assets.
6. Towards individual and joint exploitation plans

This section describes the activities carried out in the reporting period to support the exploitation planning by the DOIT partners and planned activities in the next project phases.

6.1 Activities in the reporting period

In the reporting period activities under the exploitation part of WP7 focused on developing the DOIT exploitation strategy and individual as well as joint business plans of the partners. Furthermore special attention was devoted to the project’s Open Educational Resources (OER) approach, specifically questions related to the open licensing of the DOIT products.

Understanding open licensing and business modelling (T7.5, M06)

In March 2018, at the PM Meeting in Billund (Day 2), two sessions lead by ESI and SRFG were devoted to OER and business modelling. The first session introduced the partners to the advantages and requirements of OER as a key element of the DOIT business model approach, while the second focused on how to use the Business Model Canvas method for business modelling (Osterwalder & Pigneur 2010), adapted for social organisations and businesses (www.socialbusinessmodelcanvas.com).

We introduced the Business Model Canvas method early on, because besides thinking about their exploitation strategy, it will support the partners in focusing their stakeholder relations and communication activities (as part of WP 5). In subgroups, we developed first drafts of three different canvases, addressing the DOIT value proposition, events, and toolboxes & platform. The partners have also been invited to create a business model canvas individually (e.g. for their region) and as an input for the overall exploitation plan.

The workshop enhanced awareness of the DOIT partners of open licenses and how these influence (future) usage of DOIT materials. The licensing question promoted discussion on how the project and individual partners can take up exploitation opportunities and address potential obstacles. Applying the Business Model Canvas method will help partners develop individual as well as joint business plans for exploiting project results.

Exploitation strategy and planning workshop (T7.5, M12)

End of August 2018, at the PM Meeting in Barcelona (Day 2), V. Hornung-Prähauser (SRFG) presented first results of the ongoing market research, e.g. market situation, organisations and projects with products similar to DOIT, etc. Furthermore exploitation options for DOIT results, taking account of the OER licensing, and related methods of product design and delivery, have been presented and discussed.

SRFG invited the partners to discuss and prioritize their most likely routes to high exploitation results. Among the paths considered were: individual uses, e.g. extension of an organisation’s teaching material pool; jointly as a member network, which might be useful if a certain level of standardisation and quality assurance is needed/wanted; also joint contribution and integration into other initiatives was considered (e.g. Fab Academy, Youth-Start and others). The monitoring of exploitation opportunities and evaluation of potential obstacles is ongoing.
6.2 Next steps

In the next project phases two DOIT Brokerage Events with experts and stakeholders will be organised to create synergies and generate additional ideas on how to drive usage and impact of the DOIT results (T7.4: M18 in Berlin; M30 at the final project conference). The Advisory Board Members will be actively engaged in the planning of these meetings.

Partners have been invited to develop further their individual exploitation and business ideas and consider opportunities to cooperate and form exploitation alliances. Business model plan support for the elaboration of individual and joint exploitation ideas is planned to continue with two workshops (T7.5: M24, M30). All partners will be assisted in developing further their plans for the exploitation of DOIT results, up to including potential solutions for financing needs. The results of the exploitation planning and implementation at the end of the formal duration of DOIT will be reported in the Final Communication, Dissemination and Exploitation Report (D7.4, M36).

This document presents the first draft of the DOIT exploitation plan, which will be discussed and elaborated further. The project innovation management will also regularly monitor ongoing and potential additional innovation and exploitation activities, and coordinate and support them to generate maximum impact. Special attention will be devoted to potential exploitation alliances of partners and relevant other parties. From the perspective of the overall DOIT innovation process such alliances could be particularly beneficial. Opportunities for alliances will therefore be monitored and proposed by the project innovation management where appropriate.
References


Creative Commons - Attribution 4.0 International (CC BY 4.0) license. URL: https://creativecommons.org/licenses/by/4.0/ (2018-12-11)


Fablabs.io (Fab Lab Network, list of Fab Labs). URL: https://www.fablabs.io/labs (2018-12-11)


Make: magazine (Make Media, USA): Makerspaces Directory. URL: https://makerspaces.make.ca (2018-12-11)


Project consortium