



## **D5.4 Communication and Dissemination report**

**31/04/2018**



**3D-games for  
TUNing and lEarnINg  
about hearing aids**



## **3D Tune-In: 3D-games for TUNing and lEarnINg about hearing aids**

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**Authors:** Veranika Lim and Lorenzo Picinali

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## **Abbreviations and Acronyms**

3DTI	3D Tune-In
KPI	Key Performance Indicator
BAHA	Bone Anchored Hearing Aid
BTE	Behind The Ear
CIC	Completely In Canal
DMU	De Montfort University
D&C Team	Dissemination and Communication Team
EU	European Union
GN	GN Hearing
ICL	Imperial College London
NLK	Nerlaska, S.L.
Reactify	Reactify Music
SME	Small and Medium Enterprise
UMA	University of Malaga
UNott	The University of Nottingham
VIA	Vianet
WP	Work Package
XTeam	XTeam Software Solution



## **Executive Summary**

This is the public deliverable D5.4 of the H2020 project 3D Tune-In (3DTI - 644051). This work was carried out as part of WP5 Communication and Dissemination. This document presents the communication and dissemination results of 3D Tune-In up to month 36. Following a brief introduction and background of this deliverable in Section 1, the overall strategy is defined in Section 2. In Section 3, the dissemination channels together with a detailed analysis of the results are presented. Section 4 concludes the deliverable.

## 1. Introduction and background

This is the public deliverable D5.4 of the H2020 project 3D Tune-In (3DTI - 644051). This work was carried out as part of WP5 Communication and Dissemination. The strategy for the communication and dissemination channels and target audiences for the 3D Tune-In outcomes was defined in deliverable D5.1 Communication and Dissemination strategy. The overall objectives followed by the Dissemination and Communication strategy are to:

- Define and implement an integrated **strategy** for dissemination and exploitation. It will capture the project outputs and detail how to communicate and exploit them within target audiences in the scientific, technology and industrial communities.
- Promote results and **benefits** of the project to target audiences. The key audiences will be defined as the project develops, but initial groups will be found within the games industry and hearing communities.
- Provide regular **information** about the project and its results to target audiences via the website, social media, relevant publications, conferences, fairs and exhibitions.
- Collaborate with international research and professional **networks**, and ongoing EU and national projects.

This document is structured as follows: Section 2 reiterates the overall strategy including an action plan for the different phases of the project and a summary of the overall progress up to month 36. Section 3 defines changes to the dissemination channels together with a detailed analysis of the results. Section 4 presents the dissemination activities of the partners to date and Section 5 concludes the deliverable.

## 2. Overall strategy and progress

The phases of the overall communication and dissemination strategy (as defined in D5.1) were as follows.

**Phase 1 - Initial outreach:** This was the initial phase of the project (M1-M12). The consortium produced the first deliverables and presented the 3DTI Project to the various target groups. A good number of dissemination materials were created and distributed across several communication channels. These materials were mostly focus upon the overall orientation of the project.

**Phase 2 - Consolidation:** Phase 2 (M12-M24) was focused on an effective content marketing strategy and the production of new videos, demo videos, posters, articles, etc., but ensuring the IPR protection of the Toolkit and Applications development. The content generation and duration became increasingly important for all partners.

**Phase 3 - 3DTI Applications presented to the public:** Phase 3 (M24-M30) required additional efforts and a double marketing strategy: all partners would invest more individual effort and the whole consortium prepared and designed new materials and guidelines for joint exploitation and an effective communication of these results and outputs.

**Phase 4 - Final results (everything released and evaluation):** In this phase (M30-M36), the consortium presented its final reflections and recommendations, based upon the validation stage conducted during the project.

Besides these planned activities, partners had the opportunity to communicate project results and progress by other dissemination activities. In these cases, partners communicated<sup>1</sup> to NLK and the Coordinator all envisaged dissemination activities.

### 2.1. Overall progress up to M36

KPIs (Key Performance Indicators) measured the performance in terms of Communication and Dissemination for evaluating the outcomes of the 3D Tune-In project. Table 1 below shows the most important KPIs assessed, comparing activities up to M36 with estimates.

*Table 1. KPIs: results and estimates.*

	<b>Estimates (36 months)</b>	<b>Results (M1-M36)</b>
Journal articles	2	2
Conference publications	3	18

<sup>1</sup> The procedures for accepting and submitting Dissemination and Communication activities are detailed in D5.1.

Other publications/articles	0	3
Scientific seminars and demonstrations	3	8
EU-projects networked	3	5
MSc Thesis	3	0
PhD Dissertation	1	1 in progress (Ms C. María Cuevas, UMA)

Table 2 and Table 3 show the overall progress in terms of deliverables, tasks, and dissemination and communication activities undertaken by the partners.

*Table 2. Relation of undertaken work with Tasks and Deliverables.*

<b>Deliverable and Task number</b>	<b>Title</b>	<b>Deadline</b>	<b>Short description of work</b>
D5.1 / T5.1.	Definition of the communication and dissemination strategy.	M13 -May 2016	Delivered (M4) with minor updates under discussion (pp.11-12).
D5.2 / T5.2.	Project dissemination: website, posters, brochures, videos.	M13 -May 2016	Delivered.
D5.3 / T5.3.	Dissemination activities: articles, conferences, events.	M18 - October 2016	Continuous assessment and data collection on impact indicators, communication and dissemination measurements and stats and activity reporting.
D5.4 / T5.4	Dissemination activities: articles, conferences, events.	M36 -April 2018	Final deliverable.

*Table 3. Summary of undertaken activities.*

	<b>M1-M36</b>
All scientific articles	5
Conferences	26
Diss/Com materials <sup>2</sup>	25
Non-peer reviewed articles	7
Press releases	8
Workshop, fairs and trade events	39
Newsletters	7

<sup>2</sup> Banner, leaflet, roll up, Dartanan release (roll up, cover and banner), 7 post cards, pens, tote bag, 7 videos and 2 press-kits are being considered as dissemination materials.

### **3. Dissemination channels**

As planned in D5.1, a set of public materials have been produced for the partners to be able to disseminate the project results without the need for specific approval from the consortium. This material was approved and distributed among the partners.

#### 3.1. Website [www.3d-tune-in.eu](http://www.3d-tune-in.eu)

The website was set up and has been online since July 2015. A Dissemination and Communication Team (D&C Team) was formed by ICL, NLK and VIA. Its main role was to agree and establish the main Quality Assurance procedures and to coordinate the online dissemination activity. As part of the website management, the D&C Team met often during these 36 months. The procedure for the coordination of the website content was consolidated with a monthly meeting where agenda topics, communication actions and campaigns related to the website were discussed. The main procedures agreed for website revisions were the following:

- NLK checked the website weekly. The website check included looking for bugs, issues and malfunctions, such as missing images, format errors and response time. If Energy House Digital (web designers) support was required, NLK communicated the issue directly to ICL.
- The website was updated and new content was added at least once per month. Specifically, one new activity was expected to be published each month, which included videos, new sub-pages, etc. Language checks were agreed on for ensuring the highest quality standards; NLK would carefully check and review each news item to be published. Then, it was sent to either ICL, VIA or UNOTT for a final language review before its publication. The procedure was to send it out for internal review at least seven days in advance of the release deadline.
- Also, an anticipatory contingency plan was put in place. NLK asked partners for brief articles/topics to feed future news sections. ICL was willing to provide, when requested by NLK, updates about new technical items which could be considered good news topics. One news/article was always kept non-published to ensure a regular flow of news on the website in case novel news items were not available in that specific period.
- Regarding the updates on Application pages, NLK sent an email to all SMEs asking for updates and changes concerning the games and applications on a bimonthly basis. The toolkit page was being updated on demand: any change was communicated to NLK by UMA. ICL also provided additional information about the toolkit and applications updates relevant for the website.



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- In addition, NLK will report the Diss/Com activity in a public document; this also contained the detected bugs and the modifications.



Figure 1: Website homepage.

### 3.1.1. Updates and modifications

The following sections formed the original website before M4 (Aug, 2014):

- Home: [www.3d-tune-in.eu](http://www.3d-tune-in.eu)
- About: <http://www.3d-tune-in.eu/about>
  - Objectives, approach and impact: <http://www.3d-tune-in.eu/about/h2020-objectives-approach>
  - Consortium: <http://www.3d-tune-in.eu/about/consortium>
- News (blog): <http://www.3d-tune-in.eu/news>
- Applications [UPDATED DURING Y1Q3]: <http://www.3d-tune-in.eu/applications>
  - Musiclarity: <http://www.3d-tune-in.eu/applications/hearing-aid-musical-listening>
  - Play & Tune: <http://www.3d-tune-in.eu/applications/elderly-hearing-aid>
  - Dartanan: <http://www.3d-tune-in.eu/applications/hearing-aid-children-gamification>
  - Darius Adventure: <http://www.3d-tune-in.eu/applications/hearing-educational-games>
  - AudGam PRO: <http://www.3d-tune-in.eu/hearing-aids-calibration-game>
- Open Access Research Data: <http://www.3d-tune-in.eu/open-access>
- Resources: <http://www.3d-tune-in.eu/downloads-resources>
  - Project materials: <http://www.3d-tune-in.eu/h2020-3dtunein-materials>
  - Project Public Deliverables: <http://www.3d-tune-in.eu/Deliverables>
  - Audio Demos: <http://www.3d-tune-in.eu/audiodemos-hearing-aid-loss>
  - 3D Tune-In presentation (English, Spanish and Italian): <http://www.3d-tune-in.eu/animation>
  - Questionnaire for hearing aid users: <http://www.3d-tune-in.eu/node/85>

Website modifications and updates from M4 (Aug, 2014) to M36 (April, 2018):

- Introductory Video and AudioDemos: during Y1-Q3, ICL and NLK invested relevant time and resources to record and create a video to explain how hearing aids could help people with hearing loss to improve their lives. In addition, three introductory videos, available in English, Italian, and Spanish, were designed, created and uploaded. This high-value dissemination content can be found in the *Resources > Audio demonstrations* (<http://www.3d-tune-in.eu/node/67>); also, the videos can be found at *Resources > 3D Tune-In presentation* (English, Spanish and Italian): <http://www.3d-tune-in.eu/animation>.
- A new page, called *Related EU Projects*, linked from the main header menu, was published at <http://www.3d-tune-in.eu/gamification-eu-projects>
- Public deliverables are continuously being updated on the *Resources > Project Public Deliverables* page: <http://www.3d-tune-in.eu/Deliverables>
- Applications pages were updated in January 2016, in accordance with the current Future Scenarios specified in the D1.1. (More information at <http://www.3d-tune-in.eu/applications>).

*New pages were linked in the main menu, as sub-menu items below Applications, instead of the previous ones. The future applications and videogames to be developed by all SME partners were*

*explained on the website, including some screenshots, sketches and concept-game charts where it is needed. The Applications subpages were regularly updated as the project advances.*

- Project materials were regularly uploaded to the website on *Resources > project materials*, at <http://www.3d-tune-in.eu/h2020-3dtunein-materials>
- Format issues, typos and bugs were checked weekly by NLK and the D&C Team in accordance with the procedures specified above.
- With regard to Google Analytics statistics, a spam filter was developed. Spam traffic could distort the statistics and the impact assessment on the website. Although *spam* emails did not affect the quality of the website's contents – because comments and internal interaction is not currently allowed – the filter facilitates the demographic and traffic analysis.
- Toolkit page (<http://www.3d-tune-in.eu/toolkit-developers>) was updated in March 2018, to link to the final releases. Almost all the text was modified except the last paragraph (videos).

### 3.1.2. News section and blog

The blog was regularly updated: some mechanisms were implemented to assure a regular flow of interesting content. From M4 to M36, 41 news articles were published on the website, hosted at <http://www.3d-tune-in.eu/news>. Also, two new subpages were published: one referring to the 3D Tune-In Toolkit, and another specifically dedicated to scientific dissemination, containing articles published in journals and conference papers.

### 3.1.3. Results and Website Statistics

Understandably, summer was the most challenging season of all (lower access to the website). Moreover, the navigation patterns observed were erratic and did not follow any specific trend.

#### Traffic flow

The following charts (Figure 2 and Table 4) show the traffic flow to the website, expressed as the number of sessions every week. A session is a group of interactions that take place on the website within a given time frame. Globally, 20554 sessions were opened in the period analysed. Most of the sessions were from new users (92%) while only 8% were returning visitors. The average session duration was 1 minute.

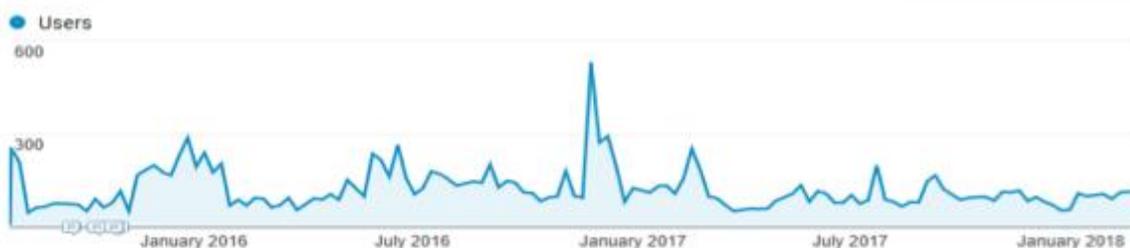


Figure 2. Traffic flow from M4 (August 2015) to M34 (February 2018)

*Table 4. Sessions (M4-M36).*

<b>Week</b>	<b>Sessions</b>	<b>Week</b>	<b>Sessions</b>	<b>Week</b>	<b>Sessions</b>	<b>Week</b>	<b>Sessions</b>
<b>1</b>	158	<b>36</b>	80	<b>72</b>	302	<b>107</b>	92
<b>2</b>	284	<b>37</b>	86	<b>73</b>	335	<b>108</b>	84
<b>3</b>	232	<b>38</b>	102	<b>74</b>	223	<b>109</b>	96
<b>4</b>	56	<b>39</b>	110	<b>75</b>	99	<b>110</b>	93
<b>5</b>	69	<b>40</b>	151	<b>76</b>	134	<b>111</b>	179
<b>6</b>	73	<b>42</b>	175	<b>77</b>	141	<b>112</b>	194
<b>7</b>	96	<b>43</b>	138	<b>78</b>	131	<b>113</b>	150
<b>8</b>	104	<b>44</b>	121	<b>79</b>	148	<b>114</b>	133
<b>9</b>	89	<b>45</b>	267	<b>80</b>	148	<b>115</b>	116
<b>10</b>	97	<b>46</b>	242	<b>81</b>	120	<b>116</b>	115
<b>11</b>	62	<b>47</b>	212	<b>82</b>	178	<b>117</b>	121
<b>12</b>	101	<b>48</b>	388	<b>83</b>	273	<b>118</b>	121
<b>13</b>	80	<b>49</b>	204	<b>84</b>	199	<b>119</b>	100
<b>14</b>	107	<b>50</b>	125	<b>85</b>	129	<b>120</b>	129
<b>15</b>	141	<b>51</b>	151	<b>86</b>	107	<b>121</b>	181
<b>16</b>	75	<b>52</b>	220	<b>87</b>	90	<b>122</b>	151
<b>17</b>	207	<b>53</b>	219	<b>88</b>	65	<b>123</b>	98
<b>18</b>	219	<b>54</b>	220	<b>89</b>	76	<b>124</b>	115
<b>19</b>	229	<b>55</b>	176	<b>90</b>	67	<b>125</b>	105
<b>20</b>	201	<b>56</b>	158	<b>91</b>	71	<b>126</b>	78
<b>21</b>	192	<b>57</b>	163	<b>92</b>	85	<b>127</b>	58
<b>22</b>	252	<b>58</b>	158	<b>93</b>	108	<b>128</b>	59
<b>23</b>	304	<b>59</b>	235	<b>94</b>	134	<b>129</b>	123
<b>24</b>	246	<b>60</b>	152	<b>95</b>	134	<b>130</b>	114
<b>25</b>	318	<b>61</b>	178	<b>96</b>	180	<b>131</b>	141
<b>26</b>	218	<b>62</b>	176	<b>97</b>	115	<b>132</b>	139
<b>27</b>	259	<b>63</b>	141	<b>98</b>	266	<b>133</b>	111
<b>28</b>	78	<b>64</b>	137	<b>99</b>	140	<b>134</b>	138
<b>29</b>	136	<b>65</b>	103	<b>100</b>	114	<b>135</b>	137
<b>30</b>	84	<b>66</b>	117	<b>101</b>	105	<b>136</b>	136
<b>31</b>	118	<b>67</b>	128	<b>102</b>	127	<b>136</b>	
<b>32</b>	113	<b>68</b>	224	<b>103</b>	105	<b>137</b>	
<b>33</b>	80	<b>69</b>	214	<b>104</b>	126	<b>138</b>	
<b>34</b>	107	<b>70</b>	197	<b>105</b>	227	<b>139</b>	
<b>35</b>	124	<b>71</b>	622	<b>106</b>	125	<b>140</b>	

*Most viewed contents*

The most viewed content was the homepage, as expected. However, homepages commonly have a higher bounce rate than some other pages. Bounce rate represents the percentage of visitors who enter the site and then leave ("bounce") rather than continuing on to view other pages within the same site. The following table shows the bounce rate.

Table 5. Bounce rates.

	<b>Title (Content)</b>	<b>Visits</b>	<b>Time (average)</b>	<b>Bounce rate</b>
1	Welcome to 3D Tune-In	14546	0:02:08	70,09%
2	3DTI Toolkit   3D Tune-In	1668	0:04:07	57,01%
3	Home page	1486	0	100,00%
4	News   3D Tune-In	1249	0:00:53	15,77%
5	About the Project   3D Tune-In	705	0:02:20	43,83%
6	Objectives, Approach and Impact   3D Tune-In	676	0:02:24	40,24%
7	Musicality   3D Tune-In	629	0:01:59	36,09%
8	Consortium   3D Tune-In	606	0:01:47	40,48 %
9	Open Access Research Data   3D Tune-I	584	0:01:04	20,55 %
10	The potential of gamification to improve quality of life for elderly people	524	0:07:19	79,65 %

The bounce rate on pages related to content considered “interesting” was low, and the time spent reading and exploring each page was well defined. The pages and articles are brief and very specific, so the time spent was adequate for the contents to be viewed by the users. NLK invested relevant effort to improve the Search Engine Optimisation, as well as the Social Media activities. Table 6 shows the results of this strategy.

Table 6. Acquisition channels.

<b>Channel</b>	<b>Sessions</b>	<b>New users</b>	<b>Pageviews/session</b>
Organic Search (e.g., Google, Bing...)	10.256	7581	1,67
Referral and social (e.g., Twitter, Facebook, LinkedIn)	6.138	4.240	2
Direct (e.g., from newsletters)	4.164	1.331	2,92

Social Media represent a very important channel for disseminating the project outcomes and news, but the *page-views per session* referring to organic searches (i.e. searches directly, from Google or from any other search engine) show an excellent performance. Users from organic searches viewed 1,7 pages per session. Direct traffic, mainly from newsletters, seems to have the highest *page-views/sessions* rate, because the targeted users appeared to be explicitly interested in the project and related topics.

*Demographic information*

Table 7 shows the most relevant demographic information as provided by Google Analytics.

Table 7. Demographic information.

<b>Age range</b>	
18 -24	22,54%

25-34	33,36%
35-44	29,92%
45-54	8,48%
55-64	3,67%
>65	1,99%
<b>Sex</b>	
Female	27,14%
Male	72,86%

#### 3.1.4. Ethics

The following ethics issues must be taken into account when publishing photos (taken during an event, conference or fair) on the website and/or Social Media channels.

- When an underage individual is photographed, and the picture is published on the website or Social Media channels, her/his face must always be blurred, with no exceptions.
- Adult individuals who are not directly involved in the project have the right to control the use of their name and image, if these are in the dissemination materials. As a consequence, a written authorisation is always needed, especially when the individual could be classified as part of a vulnerable group. Otherwise, their faces must be blurred.
- With regards to people directly involved in the project, if an individual does not desire to appear in photos which could be published, he/she must warn the WP5 leader and the Coordinator.

### 3.2. Project materials

A set of leaflets and other dissemination materials were produced and updated according to the project outcomes. The whole set of project materials can be found in the *Resources* page, at <http://www.3d-tune-in.eu/downloads-resources>.

#### 3.2.1. Videos

Due to the “content marketing-like” strategy, the website includes presentation videos, and multimedia material showing the main achievements of the project. These videos are continuously disseminated in our YouTube channel, as well as the social networks.



Figure 3. Introductory video to the 3DTI project - <https://www.youtube.com/watch?v=dtzhiA5Xnvs> (hosted on YouTube).

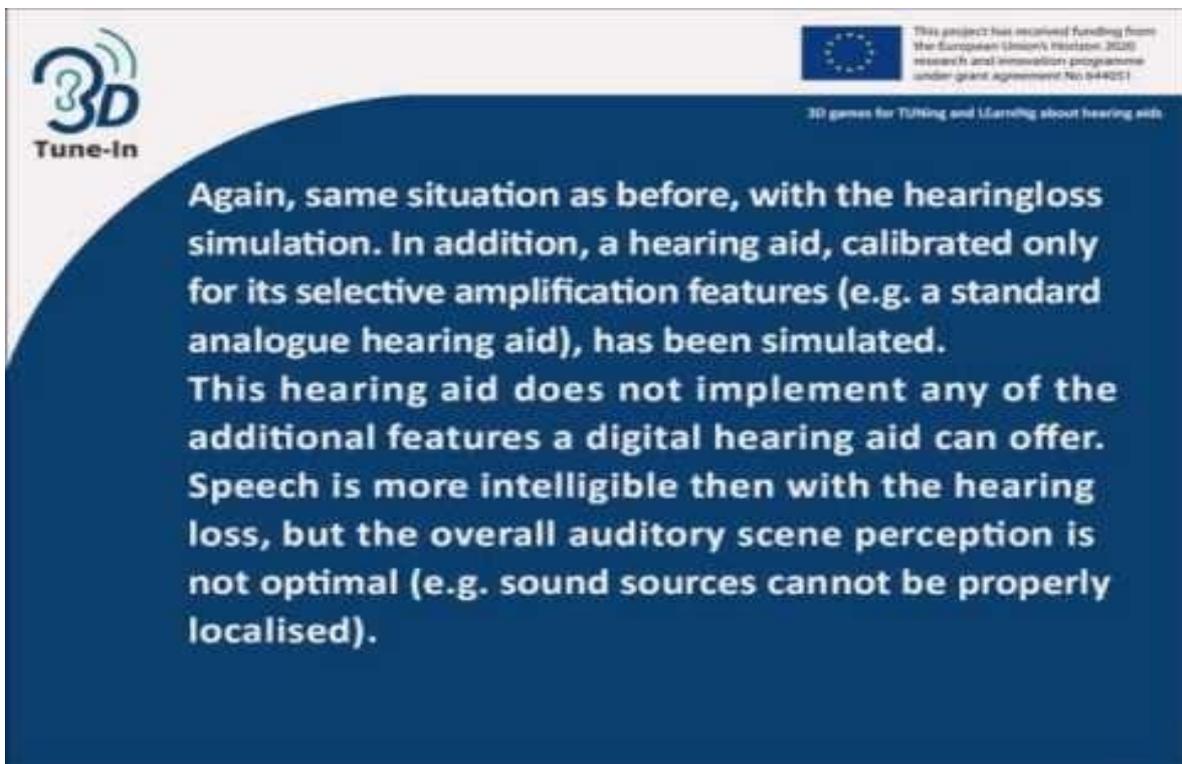


Figure 4. Reasons for using hearing aids - <http://www.3d-tune-in.eu/audiodemos-hearing-aid-loss> (hosted on YouTube).

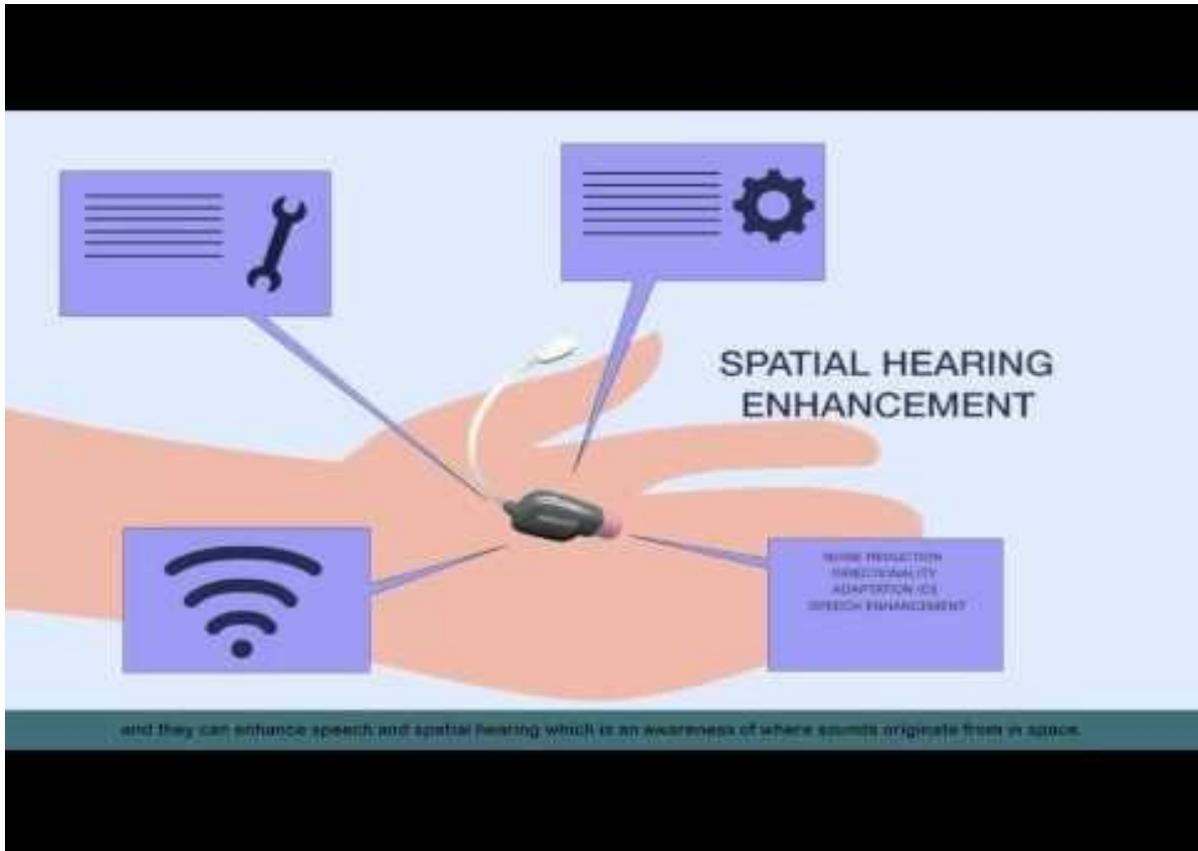


Figure 5. Animation (Spanish, English and Italian) - <http://www.3d-tune-in.eu/animation> (hosted on YouTube).



Figure 6. Introduction video - [https://www.youtube.com/watch?v=g\\_FsF28bsmw](https://www.youtube.com/watch?v=g_FsF28bsmw) (hosted on YouTube).

### 3.2.2 Branding

The project has a corporate image to keep a uniform look and feel in all dissemination material. This includes the 3D Tune-In logo, presentation templates, document templates, etc. All outlets make use of the same, professionally designed branding style, ensuring a uniform and professional appearance of the project's dissemination materials.



Figure 7. 3D Tune-in logo version 1 and 2.

Two project logos were created, as shown in Figure 6. Partners were advised to use the one on the left, and the one on the right only if it needs to be used on a dark background. During the third quarter of 2015, the Dissemination and Communication leader established a uniform guide of style for these outlets and a quality assurance procedure. The main background colour should be white with basic corporative blue colours as shown in Figure 8.

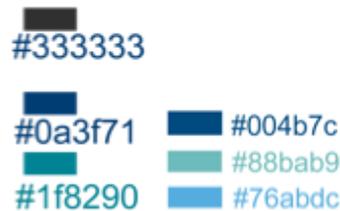


Figure 8. Basic colours.

Some other colours were also allowed as shown in Figure 9.



Figure 9. Other colours.

All materials produced within the project have to use of Arial typographies or Sans Serif, if Arial was not available.



*3.2.3. Posters, Banner and Roll-ups*

During these months, 9 printable dissemination materials were produced, all of them available on the website. See table 8 for the list of materials and a link to the materials. See figures 10 - 12 for the 3DTI leaflet, banner and roll-up.

*Table 8. Project Materials and link to public repositories.*

<b>Project material</b>	<b>Link</b>
Leaflet	<a href="http://3d-tune-in.eu/sites/default/files/leaflet-definitive.pdf">http://3d-tune-in.eu/sites/default/files/leaflet-definitive.pdf</a>
Banner	<a href="http://www.3d-tune-in.eu/sites/default/files/articles/banner_desk-definitive.pdf">http://www.3d-tune-in.eu/sites/default/files/articles/banner_desk-definitive.pdf</a>
Roll-up	<a href="http://www.3d-tune-in.eu/sites/default/files/articles/roll-up-definitive%20%281%29.pdf">http://www.3d-tune-in.eu/sites/default/files/articles/roll-up-definitive%20%281%29.pdf</a>
Press kit: academia	<a href="http://3d-tune-in.eu/sites/default/files/filedepot/3D%20Tune-In%20%283D%20games%20for%20TUNing%20and%20lEaRnINg%20about%20hearing%20aids%29_academiav4.pdf">http://3d-tune-in.eu/sites/default/files/filedepot/3D%20Tune-In%20%283D%20games%20for%20TUNing%20and%20lEaRnINg%20about%20hearing%20aids%29_academiav4.pdf</a>
Press kit: general society	<a href="http://www.3d-tune-in.eu/sites/default/files/articles/General%20presskit%20leaflet.pdf">http://www.3d-tune-in.eu/sites/default/files/articles/General%20presskit%20leaflet.pdf</a>
Press kit: general society - Spanish version	<a href="http://www.3d-tune-in.eu/sites/default/files/articles/General%20%28Espa%C3%B1ol%29%20%203D%20Tune-In%20%283D%20games%20for%20TUNing%20and%20lEaRnINg%20about%20hearing%20aids%29.pdf">http://www.3d-tune-in.eu/sites/default/files/articles/General%20%28Espa%C3%B1ol%29%20%203D%20Tune-In%20%283D%20games%20for%20TUNing%20and%20lEaRnINg%20about%20hearing%20aids%29.pdf</a>
Press kit: general society – Italian version	<a href="http://3d-tune-in.eu/sites/default/files/filedepot/General%20%28Italiano%29%20%203D%20Tune-In%20%283D%20games%20for%20TUNing%20and%20lEaRnINg%20about%20hearing%20aids%29%20v2.pdf">http://3d-tune-in.eu/sites/default/files/filedepot/General%20%28Italiano%29%20%203D%20Tune-In%20%283D%20games%20for%20TUNing%20and%20lEaRnINg%20about%20hearing%20aids%29%20v2.pdf</a>
Dartanan Banner	<a href="http://www.3d-tune-in.eu/sites/default/files/articles/Dartatano%20Banner.pdf">http://www.3d-tune-in.eu/sites/default/files/articles/Dartatano%20Banner.pdf</a>
Dartanan Cover	<a href="http://www.3d-tune-in.eu/sites/default/files/articles/Dartatano%20flyer-cover.pdf">http://www.3d-tune-in.eu/sites/default/files/articles/Dartatano%20flyer-cover.pdf</a>
Dartatan oll-up	<a href="http://www.3d-tune-in.eu/sites/default/files/articles/Dartanano%20roll-up.pdf">http://www.3d-tune-in.eu/sites/default/files/articles/Dartanano%20roll-up.pdf</a>



# 3D Tune-In: 3D-games for TUNing and lEArNIng about hearing aids

**3D Tune-In**

Subscribe to our newsletter: [www.3d-tune-in.eu](http://www.3d-tune-in.eu)

With a budget of €2,896,175 3D Tune-In is funded under Horizon 2020, the Framework Programme for Research and Innovation of the European Union. The project is coordinated by Dr. Laurent Picot from Imperial College London and has a duration of 36 months, until May 2018.

3D Tune-In (3D-games for TUNing and lEArNing about hearing aids) brings together relevant stakeholders from traditional gaming industries, academic institutes, a large European hearing aid manufacturer and hearing communities to produce digital games in the field of hearing aid technologies and hearing loss in children and older adults, addressing social inclusion, generating new markets and creating job opportunities.

**Scientific Dissemination & Research (Links)**

- 3D Tune-In presentation on the European Horizon 2020
- Hearing Journal publication on 3D Tune-In project
- Press Public information

**Useful links and Resources**

- Presentation video (English)
- Audio Demonstration: How hearing loss can impair music and speech learning
- Applications and partners to be developed during 3D Tune-In project

Imperial College London, The University of Nottingham, University of Liverpool, University of Southampton, ReSound, @OwensCorning, @acti

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 844822

**3D Tune-In**

Imperial College London, The University of Nottingham, University of Liverpool, University of Southampton, ReSound, @OwensCorning, @acti

The main idea of 3D Tune-In is to link the traditional gaming industry with the fast-growing game-based learning market and hearing device market, by applying scientific methodologies and technologies towards a new set of non-lecture applications which have real benefits for European citizens.

**3D Tune-In (3D-games for TUNing and lEArNing about hearing aids)**

Hearing loss and deafness can lead to barriers to inclusion and feelings of isolation, and can result in a more than doubled risk of depression in older people. People with mild hearing loss also face nearly double the chance of developing dementia and this risk increases significantly for those with moderate and severe hearing loss. An impaired communication can easily result in exclusion and marginalization. In particular, hearing loss in children is under-identified and under-served with direct consequences on speech and language development, communication and learning.

Over 90 million people in Europe currently suffer from hearing loss, and due to an ageing population this number is likely to continue to increase. While hearing aid (HA) technologies have dramatically advanced in the last 25 years, people's perception and use of these devices have changed very little.

**Project Videos**

3D Tune-In presentation (English)

In this video, there is a specific "musical celebration" of a hearing aid sale. This is part of what we are working with the 3D Tune-In project!

3D Tune-In: Hearing loss and learning with video dissemination online

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 844822

Subscribe to our newsletter: [www.3d-tune-in.eu](http://www.3d-tune-in.eu)

Figure 10. . Press kits. Left: for academia, right: for general society.



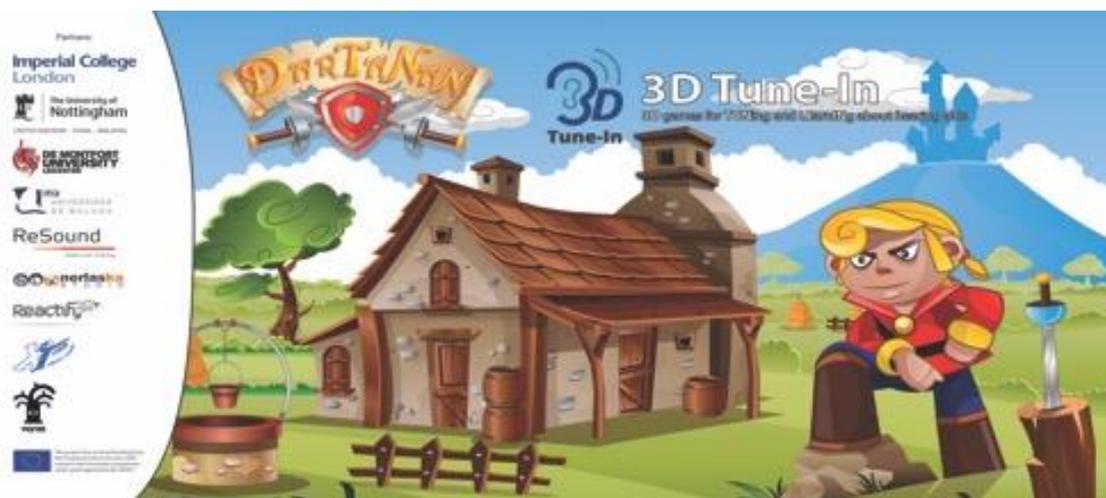
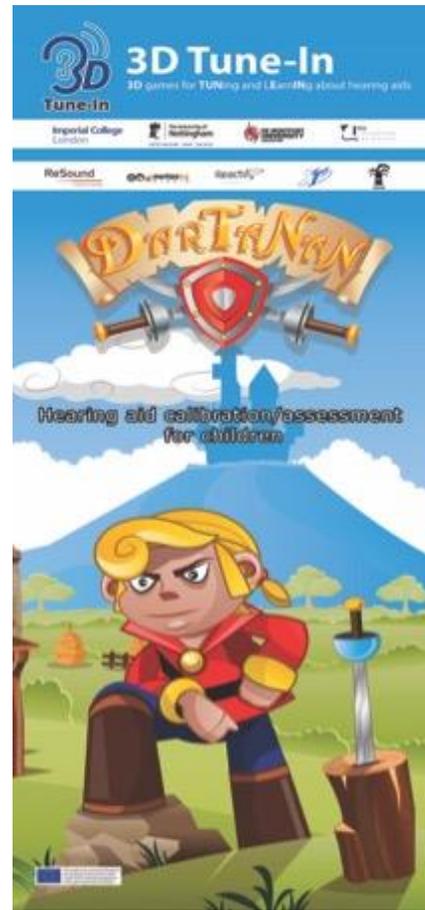


Figure 12. Dartanan application (XTEAM) materials.



## 3D Tune-In: 3D-games for TUNing and lEaRnINg about hearing aids

### 3.2.4. Post cards

A total of 7 post cards were created for the project, the toolkit and the applications:



Figure 13. 3D Tune-in postcard front and back.



## 3D Tune-In Toolkit

3D audio rendering with hearing loss & hearing aid simulation

The 3D Tune-In Toolkit has been developed by the University of Malaga and Imperial College London. It is a standard C++ library for audio spatialisation and simulation of hearing loss and hearing aids. The Toolkit includes a real-time 3D audio renderer providing a high level of realism and immersiveness within 3D audio simulations (both speaker and headphones-based). It also includes a non-linear simulator of hearing loss and a simulator of hearing aid devices. The 3D Tune-In Toolkit is released as open source for non-commercial use.

- The binaural algorithm supports multiple platforms and offers full 3D spatialisation based on efficient HRTF convolution, including smooth interpolation among HRIRs, customisation of head radius, and far- and near-field distance simulations. Any HRIRs spatial distribution in the HRTF is supported, allowing the use of any of the available HRTF databases. Optionally, a high performance - low quality mode, using IIR filters to model an ideal spherical head, can be used in low performance devices. In addition, spatial reverberation is generated based on efficient BRIR convolution using a virtual Ambisonic approach.

- The loudspeaker-based spatialiser uses second order Ambisonic encoding/decoding for spatialising the direct path, while reverberation is based on spatial IR convolution using first order virtual Ambisonic. Irregular speaker setups are also supported through corrections in amplitude and delay.
- The hearing loss simulator includes non-linear attenuation using a multiband expander for simulating perceived loudness in different frequency bands, a series of tools to configure it from standard audiogram data, and modules for the simulation of non-linear hearing loss features (e.g. reduced frequency selectivity and reduced precision in phase locking).
- The hearing aid simulator includes non-linear amplification using a dynamic equaliser, a series of tools to configure it from standard audiogram data, and configurable directionality when used together with the binaural spatialiser.

3d-tune-in.eu



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 644051

Figure 14. 3D Tune-in Toolkit post card front and back.



# AudGamPRO

## Fitting, optimization and demonstration of hearing devices

AudGam Pro is an application developed by GN Hearing, aimed at audiologists and hearing aid users of all ages. Its main goal is to assist audiologists in providing flexible virtual environments that simulate different everyday acoustic contexts for patients in the comfort of their clinics. The environments are reproduced through eight loudspeakers. These virtual environments can help audiologists to identify the best choice of hearing aid fitting to optimise hearing in different acoustic contexts. They can also help people with hearing loss to learn about the functions of their hearing aids for use in different contexts.

AudGam Pro can help to compare patients' hearing ability in different situations using different models of hearing aids in an innovative way.

Advantages of using AudGam Pro:

- Ability to extract more realistic feedback and needs from patients by immersing them in virtual environments representing different everyday acoustic situations.
- Enables more accurate fitting and precision calibration of hearing aid features for each context.
- Provides localisation tests in free field.
- Produces better data for audiologists to record and compare hearing ability with different hearing aids in different contexts.
- Provides a more relaxed and informal environment than traditional audiology appointments.

3d-tune-in.eu







This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 644051

Figure 15. AudGamPRO post card front and back.



Figure 16. Darius' Adventure post card front and back.



## Dartanan

### Hearing aid calibration and assessment for children

Dartanan is classic platform game developed by XTeam, which provides an innovative way of assessing children's ability to calibrate their hearing aid. The game consists of main levels and mini-games. The main game has three levels and each level's design is vibrant, playful and interactive to engage young players. As Dartanan, the player must jump over platforms, kill enemies, avoid traps and collect coins in order to restore and re-claim a magical flower that has been stolen by a villain.

Dartanan uses a simple gamification technique which enables the player to unlock a new mini-game after progressing through each main level.

Each mini-game focuses on different aspects of how hearing aids work and teaches children how to calibrate different settings of their hearing aids. The player receives a benefit (e.g. an extra life) in the main game on completion of each mini-game.

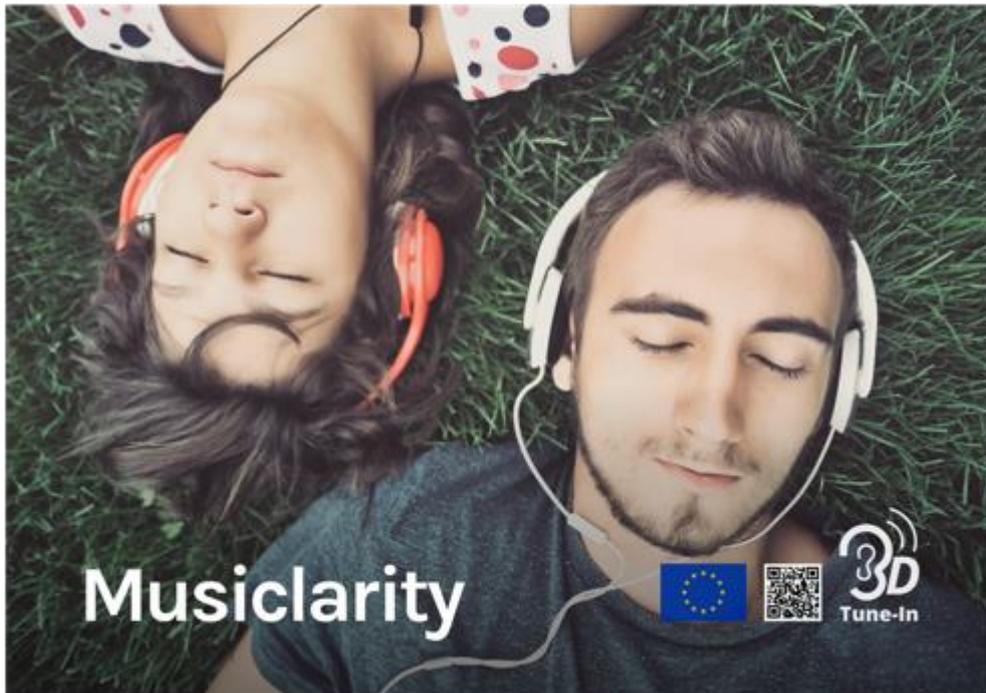
Dartanan is an interactive and fun game that also provides educational elements. The main game allows both hearing aid users and those who do not need hearing aids to play in groups, while the personalised mini-games allow training to be targeted to hearing aid users only.

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 644051

Figure 17. Dartanan post card front and back.



## Musiclarity

### Listening to music with a hearing aid

Music is a source of joy in many people's lives. However, people with hearing loss may experience a significant reduction in the quality of music they can hear, thus diminishing their enjoyment of this vital art form.

Musiclarity is an interactive music rehabilitation application designed by Reactify, dedicated to improving hearing aid users' experience of listening to music.

The application allows users to change the volume of the individual instruments within a piece of music so as to sound optimal for their particular level of hearing loss. For example, if the lyrics are hard to hear, the vocal track can be turned up. If the bass is too loud, it can be turned down or removed completely. The website also guides users on how to change the settings of their hearing aids to further refine the quality

of sound. This improved understanding of their hearing aids provides a tangible benefit in everyday life.

Lyrics and visual representations of different instruments are also displayed alongside the music, and users can even 'move' the instruments to different positions around their head to hear the various instruments with more clarity.

An individual can use Musiclarity at home or with an audiologist in order to calibrate their hearing aids and create a setting that allows them to enjoy music more in their daily lives.

Musiclarity provides an opportunity for people who wear hearing aids to be able to enjoy music again.

3d-tune-in.eu



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 644051

Figure 18. Musiclarity post card front and back.



## Play&Tune

Hearing aid calibration for all ages

Play&Tune is an application developed by Vianet, which comprises a number of engaging games. Each game simulates a series of virtual scenes with realistic sounds and requires players to complete different tasks. For example, players may be asked to identify menu items that a waiter reads out in a restaurant. Players can set up a virtual hearing aid to suit their level of hearing loss and they will learn to calibrate this hearing aid whilst playing the games. The player can calibrate parameters such as left-right levels, noise reduction or directivity.

Another example game scenario involves a player interacting in 3D space with other characters who are all speaking from different directions and in different contextual and environmental conditions (e.g. where the environment is initially quiet but becomes noisier).

The player has to identify the words spoken or answer specific questions. This can only be achieved by fine-tuning the various parameters of their hearing aid.

Play&Tune can be played by hearing aid users of all ages, but it has been designed to be sensitive to the requirements of older adults who represent the majority of the hearing aid consumer market. The utilisation of the full range of hearing aid functionalities available is particularly challenging for this age group. Older adults are less likely to be familiar with or interested in technologies, including digital games.

Therefore Play&Tune includes acoustic environments and social situations that are meaningful to this age group, and considers their particular needs for interaction with the application. Play&Tune also aims to target manufacturers and resellers of hearing aids.

3d-tune-in.eu



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no 644051

Figure 19. Play & Tune post card front and back.



### 3D Tune-In: 3D-games for TUNing and lEaRnINg about hearing aids

#### 3.2.5. Other promotional material

Other promotional materials included pens, notes, lanyards and a tote bag.



Figure 20. Pens and the tote bag.

### 3.3. Newsletters

A newsletter was produced every three months, collecting information such as achieved milestones, achieved results and events of special interest. The consortium has sent 7 newsletters: the first one – the introductory newsletter – was aimed at presenting the project to its target audience. The subsequent newsletters had the objective to widely disseminate the most important news.

Newsletter ID/Date (MM/DD/YYYY)	Recipients	Open rate	Click rate	Open	Click	Bounce	Unsubscribed
Introductory Email 3/4/2016	59	30,4%	3.6%	17	2	3	1
Newsletter #1 3/22/2016	97	33,7%	5,4%	31	5	5	0
Newsletter #2 2/11/2016	96	37%	6,5%	34	6	4	0
3DTune In. Ayudanos a conocerte! 7/20/2016	25	36%	0	9	0	0	0

Newsletter #3 9/21/2016	96	33,7%	4,3%	31	4	4	1
Newsletter #4 12/22/2016	96	38%	4,3%	35	4	4	0
Newsletter #5 27/6/2017	119	39,4%	7,3%	43	8	10	0
Newsletter #6 10/5/2017	116	36,7%	3,7%	40	4	7	0
Newsletter #7 12/26/2017	115	29,4%	5,5%	32	6	6	1
Latest News 3/27/2018	113	24,5%	3,7%	26	3	7	0

Table 9. Newsletters.

### 3.4. Press releases and non-peer reviewed articles

Public documents were released as a means of providing regular updates to the wider public about the current status and position of the project. From M1 to M36, 15 press releases and non-peer reviewed articles were published.

Table 10. Press releases and non-peer reviewed articles.

Type	Content	Date and place	Targets	URL
Non-peer reviewed article	CORDIS WIRE	26/06/2015	Research	<a href="http://cordis.europa.eu/news/rcn/125017_en.html">http://cordis.europa.eu/news/rcn/125017_en.html</a>
Press Release	Audiology World News	07/08/2015	Audiologists	<a href="http://www.audiology-worldnews.com/profession/1406-3d-tune-in-facilitating-hearing-aid-use-through-gaming">http://www.audiology-worldnews.com/profession/1406-3d-tune-in-facilitating-hearing-aid-use-through-gaming</a>
Press Release	La Voce di Rovigo	28/09/2015	General public	Printed
Non-peer reviewed article	IneveryCrea article	19/10/2015 (Website, Spain)	Educational community	<a href="http://ineverycrea.net/comunidad/ineverycrea/recurso/3d-tunein-deficits-auditivos-en-el-aula/388c0e5e-ced8-4010-8b05-51a69e8dfc02">http://ineverycrea.net/comunidad/ineverycrea/recurso/3d-tunein-deficits-auditivos-en-el-aula/388c0e5e-ced8-4010-8b05-51a69e8dfc02</a>
Press release	Euro VR translated in Italian	20/11/2015	Audiologists	Printed
Non-peer reviewed article	Mercury (website)	15/11/2016	Audiologists	<a href="http://www.mercurydiagnostics.it/">http://www.mercurydiagnostics.it/</a>
Non-peer reviewed publication	Escuela20 (website)	12/11/2015	Educational community	<a href="http://www.escuela20.com/gamificacion-educacion-edtech/articulos-y-actualidad/para-que-sirve-la-gamificacion-en-el-mundo-real_3969_42_5579_0_1_in.html">http://www.escuela20.com/gamificacion-educacion-edtech/articulos-y-actualidad/para-que-sirve-la-gamificacion-en-el-mundo-real_3969_42_5579_0_1_in.html</a>
Non-peer reviewed	European Digital Agenda: mention	02/12/2015	Industry players	<a href="http://ec.europa.eu/digital-agenda/en/news/european-">http://ec.europa.eu/digital-agenda/en/news/european-</a>

article				commission-supports-research-and-innovation-technologies-break-down-barriers-people
Press Release	Audiology Infos: "Usage Gli Apparecchi Acustici"	03/03/2016	Audiologists	Printed
Non-peer reviewed article	Tecniche di gamification e sistemi di intelligenza artificiale applicati alle protesi acustiche	04/03/2016	Industry players	<a href="http://www.triwu.it/3dtunein/">http://www.triwu.it/3dtunein/</a>
Non-peer reviewed article	Kveloce article	05/05/2017	End-users, audiologists, research	<a href="http://kveloce.com/desayuno-gamificacion-h2020/">http://kveloce.com/desayuno-gamificacion-h2020/</a>
Press Release	Video by Florida Universitaria	18/05/2017 - Valencia (Spain)	General public, end-users, developers	<a href="https://twitter.com/floridareplay/status/865174593572659201?s=09">https://twitter.com/floridareplay/status/865174593572659201?s=09</a>
Press Release	I videogiochi al servizio dell'udito. Newsletter: NuovaFe	06/2017. Italy	General Society	N/A
Press Release	NHS England's Healthcare Science Awards.	26/03/2018 London	Healthcare and general public	<a href="https://www.imperial.ac.uk/news/185487/apps-that-help-users-tune-hearing/">https://www.imperial.ac.uk/news/185487/apps-that-help-users-tune-hearing/</a>
Press Release	Demonstration of AudGam Pro	29/03/2018 Italy	Italian mainstream audience	<a href="https://www.raiplay.it/video/2018/03/Tutta-Salute-0f31df6c-f1ef-4cca-ae51-70f3e6b40ea1.html">https://www.raiplay.it/video/2018/03/Tutta-Salute-0f31df6c-f1ef-4cca-ae51-70f3e6b40ea1.html</a>

### 3.5. Academic Dissemination

Scientific dissemination is supported by publications in peer reviewed journals and scientific conferences. So far, partners have been involved in 8 scientific dissemination activities including seminars and demonstrations. Table 11 summarises the dissemination event or activity and its location and date.

*Table 11. Seminars and Demonstrations.*

<b>Event</b>	<b>Date and place</b>
3D Tune-In Toolkit workshop at the EuroVR conference	12 - 14 December 2017; Laval, France



### 3D Tune-In: 3D-games for TUNing and lEArnINg about hearing aids

3D Tune-In Toolkit demonstration at the ASC'17, 3rd International Congress of Art, Science and City	23 - 24 November 2017; Malaga, Spain
An open-source C++ library for audio spatialization and simulation of hearing loss and hearing aids - the 3D Tune-In Toolkit. Workshop at the 4th International Conference on Spatial Audio.	7 - 10 September, 2017; Graz, Austria.
3D-game for TUNing hEarINg aids (3D Tune-In): Connecting Hearing Aid Stakeholders with Digital Game Designers	16 March, 2016; Nottingham, UK
Seminar titled "Applications with Binaural Audio" (Institute of Sound and Vibration Research (ISVR) at the University of Southampton)	16 February, 2016; Southampton, UK
Imperial MedTech Links event: Wearables, Behaviour and Data - Presentation titled "Using Virtual Reality (VR) to improve hearing aid effectiveness", and demo of the HRTF adaptation test.	23 March, 2016; London, UK
Annual congress of Italian Society of otorhinolaryngology	25 - 28 May, 2016; Rome, Italy
IDETC/CIE 2015	2 - 5 August, 2015; Boston, USA

Table 12 details the peer-reviewed scientific activities including published and *in press* outcomes.

Table 12. Conference Proceedings.

<b>Title of Scientific Publication</b>	<b>Authors</b>	<b>Name of the conference or proceedings</b>	<b>Type of paper</b>	<b>Publisher</b>	<b>Date and place of event</b>	<b>Status and year of publication</b>	<b>Is/will open access be provided for this publication</b>
The 3D Tune-In Toolkit – 3D audio spatialiser, hearing loss and hearing aid simulations	Cuevas-Rodriguez, M., Gonzalez-Toledo, D., de La Rubia-Cuestas, E., Garre, C., Molina-Tanco, L., Reyes-Lecuona, A., Poirier-Quinot, D. and Picinali, L.	In Proceedings of the IEEE 4 <sup>th</sup> Workshop on Sonic Interactions for Virtual Environments, IEEEVR	Workshop paper	IEEE	18 - 22 March 2018; Reutlingen, Germany	Accepted, 2018	<i>Yes – Green OA</i>
A VR-based Mobile Platform for Training to Non-individualised Binaural 3D Audio	Kim, C., Steadman, M., Lestang, J., Goodman, D., Picinali, L.	In Proceedings of the Audio Engineering Society Convention	Convention paper	AES	May, 2018; Milan, Italy	Accepted, 2018	<i>No</i>
Design for redundancy in a participatory action that helps user calibrating hearing devices	Simeone, L.	Proceedings of PIN-C	Short paper	Design United	11 - 13 January 2018; Eskilstuna, Sweden	Published, 2018	<i>Yes – Green OA</i>
Toward a more granular management of the calibration process for hearing devices: The role of design-based knowledge translation	Simeone L., Picinali L. and Atvur A.	In the Proceedings of the Design Research Society (DRS) 2018 Conference	Conference paper	DRS	June, 2018; Limerick, UK	Published, 2018	<i>No</i>
An open-source audio renderer for 3D audio with hearing loss and hearing aid simulations	Cuevas-Rodriguez, M., Gonzalez-Toledo, D., de La Rubia-Cuestas, E., Garre, C., Molina-Tanco, L., Reyes-Lecuona, A., Poirier-Quinot, D. and Picinali, L.	In the Proceedings of the 142 <sup>nd</sup> Audio Engineering Society Convention	Convention paper	AES	20 - 23 May 2017; Berlin, Germany	Published, 2017	<i>Yes – Green OA</i>
Novel 3D games for people with and without hearing loss 3D Tune-In outcomes 3D Tune-In Toolkit	D' Cruz, M., Patel, H., Hallewell, M., Salanitri, D., Velzen, J. and Picinali, L.	9th International Conference on Virtual Worlds and Games for Serious Applications	Poster	IEEE	6 - 8 September, 2017; Athens, Greece	Published, 2017	<i>Yes – Green OA</i>



### 3D Tune-In: 3D-games for TUNing and lEarnINg about hearing aids

Title of Scientific Publication	Authors	Name of the conference or proceedings	Type of paper	Publisher	Date and place of event	Status and year of publication	Is/will open access be provided for this publication
3D Tune-In: Evaluating applications designed to support hearing aid users in the customisation of their hearing experience	Hallewell, M., Patel, H., Salanitri, D., D'Cruz, M., Levto, Y., and Simeone, L.	In the Proceedings of the British Academy of Audiology 14th Annual Conference	Poster	BAA	15 - 17 November; Bournemouth, UK	Published, 2017	Yes – Green OA
3D Tune-In (3DTI): Evaluation of games to improve knowledge of hearing aids in children with and without hearing loss	Salanitri, D., Patel, H., Hallewell, M., D'Cruz, M., Tamascelli, S., Linares, T. and Vallina, B.	In the proceedings of the British Academy of Audiology 14th Annual Conference	Poster	BAA	15 - 17 November; Bournemouth, UK	Published, 2017	Yes – Green OA
The iterative design and evaluation of gaming applications to facilitate the use of appropriate hearing aid functionalities in different acoustic contexts	Patel, H., D'Cruz, M. and Hallewell, M.	In the Proceedings of the European Federation of Audiological Societies conference	Poster	N/A	7 - 10 June 2017; Interlaken, Switzerland	Published, 2017	Yes – Green OA
An open-source C++ library for audio spatialization and simulation of hearing loss and hearing aids	Picinali, L., Cuevas-Rodriguez, M., Gonzales-Toledo, D., de la Rubia-Cuestas, E., Garre, C., Molina-Tanco, L., Poirier-Quinot, D. and Reyes-Lecuona, A.	In the Proceedings of the International Conference on Spatial Audio 2017	Workshop paper	N/A	7 – 10 September, 2017; Graz, Austria	Published, 2017	No
Comparative perceptual evaluation between different methods for implementing reverberation in a binaural context	Picinali, L., Wallin, A., Levto, Y. and Poirier-Quinot	In the Proceedings of the 142 <sup>nd</sup> Audio Engineering Society Convention	Convention paper	AES	Berlin, Germany	Published, 2017	Yes – Green OA
Participatory design of gaming applications to facilitate the use of appropriate hearing aid	Patel, H., Hallewell, M., D'Cruz, M., Eastgate, R., Cobb, S. and Picinali, L.	The proceedings of the British Academy of Audiology Conference	Full paper	BAA	Glasgow, UK	Published, 2016	Yes – Green OA



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Title of Scientific Publication	Authors	Name of the conference or proceedings	Type of paper	Publisher	Date and place of event	Status and year of publication	Is/will open access be provided for this publication
functionalities in different acoustic contexts							
User involvement in design and application of virtual reality gamification to facilitate the use of hearing aids	Patel, H., Cobb, S., Halewell, M., D’Cruz, M., Eastgate, R. and Picinali, L.	International Conference on Interactive Technologies and Games (iTAG)	Full paper	IEEE	Nottingham, UK	Published, 2016	Yes – Green OA
3D Tune-In: interactive gaming and VR prototypes to facilitate the use of hearing aids	Picinali, L., D’Cruz, M. and Simeone, L.	Proceedings of the EuroVR Conference	Poster	European Association for Virtual Reality	Athens, Greece	Published, 2016	Yes – Green OA
3D Tune-In: The Use of 3D Sound and Gamification to Aid Better Adoption of Hearing Aid Technologies	Levtov, Y., Picinali, L., D’Cruz, M. & Simeone, L.	Conference paper at 140th Audio Engineering Society Convention	Full paper	Audio Engineering Society	Paris, France	Published, 2016	Yes – Green OA
3D Tune-In: 3D-games for TUNing and lEarnINg about hearing aids	Picinali, L., D’Cruz, M. & Simone, L.	The 12th International Conference on Intelligent Environments - IE’16	Poster	N/A	London, UK	Published, 2016	Yes – Green OA
A mobile-based platform for evaluating localisation of virtual sound sources (poster demo)	Steadman. M., and Picinali, L.	Workshop on Auditory Neuroscience, Cognition and Modelling	Poster	QMUL, London	17 February 2016; London, UK	Published, 2016	Yes – Green OA
3D-Tune-In: the use of 3D visuals and sound to facilitate use of hearing devices	Picinali, L., D’Cruz, M. & Simone, L.	Proceedings of the EuroVR Conference	Full paper	European Association for Virtual Reality	Lecco, Italy	Published, 2015	Yes – Green OA



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*Table 12. Journal articles.*

<b>Title of Scientific Publication</b>	<b>DOI</b>	<b>ISSN or eSSN</b>	<b>Authors</b>	<b>Title of the Journal</b>	<b>Number, date</b>	<b>Publisher</b>	<b>Status and year of publication</b>	<b>Relevant pages</b>	<b>Peer review</b>	<b>Is/will open access be provided for this publication</b>
Knowledge translation mechanisms in open innovation: the role of design in R&D projects	10.1108/JKM-10-2016-0432	ISSN: 1367-3270	Simeone, L., Secundo, G., Schiuma, G.	Journal of Knowledge Management	Volume 21, issue 6	Emerald Publishing Limited	Published, 2017	1406-1429	Yes	Yes
3D Tune-In: 3D Games for Tuning and Learning About Hearing Aids	10.1097/01.HJ.0000481810.74569.d8	ISSN: 0745-7472; Online ISSN: 2333-6218	Eastgate, R., Picinali, L., Patel, H., & D'Cruz, M.	Hearing Journal	Volume 69, Issue 4	Wolters Kluwer	Published, 2016	30-32	Yes	Yes - Gold OA

*Table 13. Other scientific publications.*

<b>Title of Scientific Publication</b>	<b>Authors</b>	<b>Title of the magazine or equivalent</b>	<b>Type of activity</b>	<b>Status and year of publication</b>	<b>Is/will open access be provided for this publication</b>
3D-games for TUNing and lEarnINg about hearing aids	Frost, E. & Picinali, L.	British Society of Hearing Aid Audiology (BSHAA) People magazine	Article	Published, 2018	Yes
Tuning on 3D Games	Picinali, L.	Action on Hearing Loss magazine	Article	Published, 2017	Yes
The design of digital applications to facilitate the use of appropriate hearing aid functionalities in different acoustic contexts	Patel, H.	British Academy of Audiology (BAA) Magazine	Article	Published, 2017	Yes

### 3.6. Joint activities with other EU projects

The 3D Tune-In consortium has built relations and alliances with five EU-Funded projects. This contributes to ensure the sustainability and the transfer of best practices in the field of dissemination and communication; we participated in some joint scientific dissemination activities. The D&C Team started the prospective search for alliances in December 2015. The related EU projects are detailed at <http://www.3d-tune-in.eu/gamification-eu-projects>. These projects were as follows.

- **NO ONE LEFT BEHIND:** Gamification for inclusive formal learning environments. Website: <http://no1leftbehind.eu/>
- **PROSOCIAL LEARN:** Gamification of prosocial learning for increased youth inclusion and academic achievement. Website: <http://prosociallearn.eu/>
- **RAGE:** Boosting games development for education and training in Europe. Website: <http://rageproject.eu/>
- **BEACONING:** Gameful personalized learning. Website: <http://www.beaconing.eu/>
- **MOBILE AGE:** Inclusion of seniors in digital services. Website: <http://www.mobile-age.eu/>

Regular meetings took place between the 3DTI coordinator and partners of these projects, aiming at collaborating towards maximising results and impact of the project.

### 3.7. Public presentations at fairs and events

In a similar way to that for the scientific community, project results were being disseminated in fairs and events focused on the video games industry, including independent developers and bigger publishers. The partners – specifically SMEs – have attended 39 workshops or trade-fairs, as detailed in Table 14.

*Table 14: Workshop, fairs and trade events.*

<b>Event</b>	<b>Date and place</b>	<b>Target Audience</b>
Game Conference Zurich	1/07/2015 Milano (Italy)	Research
Game Over - Indie developers fair and party (Milano)	19/9/2015-20/9/2015 Milano (Italy)	Industry players
F.I.R.S.T. 2015 (Festival Per L'Innovazione, La Ricerca, Il Sociale e Il Territorio)	25/9/2015-26/9/2015 Padova (Italy)	Research
Imperial Fringe	24/9/2015 London (UK)	Research
ROBRICK fair	31/10/2015 Rovigo (Italy)	General public
Generali Innovation Challenge (Microsoft)	17/11/2015 Rovigo (Italy)	Industry players
IV CONGRESSO NAZIONALE Palacongressi di Rimini	20/11/2015-22/11/2016 Rimini (Italy)	Elderly end-users



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48th RUMSX (Valencia)	2/12/2015 Castellón (Spain)	Industry players
3D Tune-In used as a project work at the Politecnico di Milano	18/1/2016 Milano (Italy)	Other
SMAU Workshop - New opportunities for the development of technologies for disability and quality of life	11/03/2016 Padova (Italy)	Industry players
Mathematics and rehabilitation	19/3/2016 PiGreco Rovigo (Italy)	Other
Math ideas	20/3/2016 Padova (Italy)	Other
Bologna Children's Book Fair	04/04/2016 Bologna (Italy)	Educational community
Imperial Festival 2016	7/5/2016-8/5/2016 London (UK)	Academics, industry and general public
NordicGame 2016	20/5/2016 Malmo (Sweden)	
Salone Internazionale del Libro di Torino 2016	12/5/2016-16/5/2016 Torino (Italy)	Journalists, education, publishers. General society.
SIFEL (Italian Society of Phoniatics and Logopedics speech therapy) Congress	23/6/2016-25/6/2016 Catania (Italy)	Medical doctors, audiologists
Jobs and Orienta 2016	30/11/2016-2/12/2016 Verona (Italy)	General public
Big Buyer 2016	23/11/2016-25/11/2016 Bologna (Italy)	Industry players
Seminar presentation of 3d Tune-In project at Imperial	3/11/2016 London (UK)	Clinical
SMAU Milano	25-26/10/2016 Milano (Italy)	Industry Players
Rovigo Espone - economia in mostra	22/10/2016-25/10/2016 Rovigo (Italy)	Industry players. General public
Winter Wonderland	8/1/2017-9/1/2017 Ferrara (Italy)	General public and industry players
PAX East 2017	10/3/2017 - 12/3/2017 Boston, MA. USA.	Gamers
AI VENEZIA	6/4/2017 Venezia (Italy)	Industry players
SMAU Padova	30/03/2017-31/03/2017 Padova (Italy)	Industry players
Desayuno Innovador (Las Naves - Valencia) - Spain	01/05/2017 Valencia (Spain)	Audiologists, investors, associations of end-users and industry players
NordicGame 2017	17/05/2017 - 19/05/2017 Malmo (Sweden)	Industry
SMAU Bologna	08/6/2017-09/6/2017 Bologna (Italy)	Industry
Campus Party Milan	20/7/2017-23/7/2017 Milano (Italy)	ICT developers, hackers, Open Source Community, gamers
Festival Smart Innovation	15/9/2017/17/9/2017 Treviso (Italy)	Industry
AGE UK Health Fair	3/10/2017	Senior citizens. End-

	London (UK)	users
BAA - 14th annual conference of the British Audiological Association	16/11/2017-17/11/2017 Bournemouth (UK)	Audiologists; academia
Digital Meet	20/10/2017 Rovigo (Italy)	Educational community
Cartoomics- Comics/Games/Movies fair	9-11/03/2018 Milan, Italy	Civil Society, Press
Conference at Bologna Children’s Book Fair (Digital Café)	28/03/2018 Bologna (Italy)	General public
Stand at Bologna Children’s Book Fair (Digital Café)	26-28/03/2018 Bologna (Italy)	General public
Conference to Apple and Google at Bologna Children’s Book Fair (Digital Café)	27 March 2018 Bologna (Italy)	Industry
Trieste ENS Office	07/04/2018 Trieste (Italy)	End-users

### 3.8. Social media activity

Creating a large online community is an effective method for exploitation of project results. A variety of social media platforms (e.g. YouTube, Twitter, Facebook, LinkedIn) were considered to further enhance the communication of the project and its results. As seen in Section 4.1., social media channels have a great impact on dissemination of results, being an important source of web-traffic, and a new engaging way to involve the society, the civil society, main players and professional and academic communities.

#### 3.8.1. Strategy

The Social Media plan was updated in September 2015. However, it was also modified as the project advanced to adapt the content and methodology to each of the phase objectives (Section 3 – Overall Strategy).

#### 3.8.2. Objectives

- **To provide a regular flow of information** about the project and its results to both industry and academic community.
- **To promote results and benefits of the project to target audiences.** Key audiences were defined as the project developed, but initial groups were found within the games industry and hearing communities.

#### 3.8.3. Social Media Channels

From M4 to M36, a Facebook page, Twitter account, a YouTube channel and a LinkedIn group were created and regularly updated:

##### **Facebook** (<https://www.facebook.com/3DTuneIn>)

Purpose: connects with stakeholders and relevant researchers. Allows segmental advisory if needed.

Uses: spreading news and networking. Content curation.

##### **Twitter** (<https://twitter.com/3dtunein>)

Purpose: Twitter is a very ephemeral channel, but it allows conversation, networking using a collaborative approach and gets information about similar initiatives. It also works as a newsfeed.



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Uses: Newsfeed, networking.

**YouTube** (<https://www.youtube.com/channel/UCXIdMvJQjdZ0bnaovEXcjLg>)

Purpose: Share multimedia dissemination content with stakeholders and researchers worldwide (slides, speeches, events, successful use cases, etc.).

Uses: Repository of multimedia dissemination material.

**LinkedIn** (<https://www.linkedin.com/groups/8409367/profile>)

Purpose: Disseminate the project outcomes among EU researchers, special education teachers and therapists, etc.

### 3.8.4. Vision statements

- **Knowledge transfer.** Apply technologies and techniques normally used in traditional gaming applications to a non-leisure application such as HA demonstration and calibration.
- **Gamification.** Successfully employ a gamification approach for tasks (demonstration and calibration of HA) which have never been related to games.
- **Game-centred.** Make the gaming part of 3D Tune-In fully integrated into the system in a way that it is not just useful, but the essence of the application.
- **Transferrable.** Make the experience using 3D Tune-In applications actually reflect the real world, and to work as a real-world experience. The HA calibration performed through VR tools within 3D Tune-In, will be successfully usable in real-world scenarios.
- **Affordable.** Make the 3D Tune-In tools affordable, both regarding cost and usability.

### 3.8.5. Targets, channels and communication

Table 15. Overall strategy and minimum required interaction.

Social Media Tool	Main target/s (organised by priority)	Communication	Frequency
Facebook	People with hearing aids Industry & IT developers and providers Audiologists, physicians, etc. Special Education.	Links (website, external resources) Images and photography show great impact (events, screenshots, etc.) Video (YouTube)	1 post per week (min). Not connected to Twitter feed. Check primetime (1M): a priori, 20.00pm
Twitter	Special Education Industry & IT developers and providers Audiologists, physicians, etc. People with hearing aids	News and links to website or YouTube and external resources. Conversation and community building	4 posts per week Check primetime (3M). Standard: 12:00, 17:00, 18:00, 20:30.
YouTube	Industry & IT developers and providers Special Education. Audiologists, physicians, etc.	Videos: presentations, speeches, slides, use-cases.	On demand.
LinkedIn	Industry & IT developers and providers Special Education.	Newsfeed, networking.	1 post per month.



### 3.8.6. *Social media content procedures*

The procedure did not include an approval process for all content. A content removal procedure was agreed for inappropriate content. Involved partners in charge of Social Media channels may NOT post the following:

- a) Duplicate content
- b) Twitter feed clones (Facebook and Twitter are different: duplicating the Twitter feed is a malpractice)
- c) Third-party advertising. If a SME/freelance uses the Facebook page for advertising his/her games, etc. it will be deleted, and the user will be blocked.
- d) Content intended for an adult audience or violent images, videos or text.

Privacy strategies or procedures were in place to ensure the security of personal information was in line with Data Protection Regulations for each country involved. No specific procedures were established on accepting new followers.

### 3.8.7. *Performance and statistics.*

The following measurements were taken from LikeAnalyser, Sociograph.io and Cycle.

#### **Facebook**

Currently, the Facebook fan page has 142 likes and 144 followers. These numbers seem to have stabilised since the last deliverable. The most important rates are the PTAT (*People Talking About This*) and the Engagement rate: these are 2 and 1% respectively<sup>3</sup>.

The fan page managers published 0.4 posts per day on average and there were 2 interactions per post. Regarding the types of posts, 8.5% were images (without links or any other interactive resource), 3.47% were videos and 86.9% were links; the fans responded best to links, especially links posted at midday (between 12.00pm and 14.00pm) and evening (between 19:00 and 21:00) (GMT).

The posts often had more than 100 characters (120 characters in average) to improve the search engine optimisation and the engagement of these. Up to date, 460 posts have been published.

The Facebook audience shows interest for hearing loss, tips for daily life and research in general. Top posts, since the beginning (“al-time posts”) are detailed in Table 16. Most of the page fans were women (51%), and the majority of visits came from Italy.

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<sup>3</sup> Source: LikeAlyzer.

*Table 16. All-time top posts.*

	<b>id</b>	<b>Description</b>	<b>URL</b>	<b>Time</b>	<b>Likes</b>	<b>Comment</b>	<b>Shares</b>	<b>Type</b>
1	16724862529 80377_18022 06140008387	End-users survey: Spanish version <i>Advertised traffic, non-organic</i>	<a href="https://www.facebook.com/1672486252980377/posts/1802206140008387">https://www.facebook.com/1672486252980377/posts/1802206140008387</a>	2016-07-19T10:11:00+0000	54	0	1	link
2	16724862529 80377_17087 98979349104	Málaga meeting post and photo	<a href="https://www.facebook.com/1672486252980377/posts/1708798979349104">https://www.facebook.com/1672486252980377/posts/1708798979349104</a>	2015-10-30T12:47:52+0000	8	0	2	photo
3	16724862529 80377_17080 36966091972	Málaga meeting pictures	<a href="https://www.facebook.com/1672486252980377/posts/1708036966091972">https://www.facebook.com/1672486252980377/posts/1708036966091972</a>	2015-10-27T09:50:48+0000	7	0	1	photo
4	16724862529 80377_17433 54192560249	Most deaf and hearing impaired children can attend mainstream schools with adequate support	<a href="https://www.facebook.com/1672486252980377/posts/1743354192560249">https://www.facebook.com/1672486252980377/posts/1743354192560249</a>	2016-02-26T11:01:00+0000	7	0	0	link
5	16724862529 80377_17082 73746068294	Málaga meeting pictures	<a href="https://www.facebook.com/1672486252980377/posts/1708273746068294">https://www.facebook.com/1672486252980377/posts/1708273746068294</a>	2015-10-28T09:50:53+0000	6	0	1	photo
6	16724862529 80377_17005 75343504801	The development of #HearingAids over time	<a href="https://www.facebook.com/1672486252980377/posts/1700575343504801">https://www.facebook.com/1672486252980377/posts/1700575343504801</a>	2015-10-07T17:10:01+0000	6	0	0	photo
7	16724862529 80377_17692 51893303812	Nottingham meeting pictures	<a href="https://www.facebook.com/1672486252980377/posts/1769251893303812">https://www.facebook.com/1672486252980377/posts/1769251893303812</a>	2016-04-27T06:38:00+0000	7	0	0	photo
8	16724862529 80377_17433 54675893534	The Hearing Journal, a well-known publication in hearing healthcare, has published a paper about our project.	<a href="https://www.facebook.com/1672486252980377/posts/1743354675893534">https://www.facebook.com/1672486252980377/posts/1743354675893534</a>	2016-02-26T09:03:00+0000	6	0	0	link

9	16724862529 80377_17301 08177218184	Communication Tips For All From Someone With Hearing Loss	<a href="https://www.facebook.com/1672486252980377/posts/1730108177218184">https://www.facebook.com/1672486252980377/posts/1730108177218184</a>	2016-01-15T11:17:01+0000	6	0	0	link
10	16724862529 80377_17160 92218619780	Experts have published in The Lancet a list of the most urgent priorities for researching mild to moderate #hearingLoss	<a href="https://www.facebook.com/1672486252980377/posts/1716092218619780">https://www.facebook.com/1672486252980377/posts/1716092218619780</a>	2015-11-27T11:53:31+0000	5	0	0	link

*Socio-demographic analysis*

47% of followers were male, and 53% female. The vast majority of our followers and fans were aged between 25-34 years old (33%), followed by the 35-44 years old group (30%). People over 55 years old represented 11% of the total audience increased by 7%, which reflects the effort invested to reach the oldest age groups. The Italian partners invested great resources in their dissemination activity and it is reflected in the Italian audience that represented about 32% of the total audience in Facebook. People from Spain represented 27% of the audience, 14% were from the United Kingdom, 3% from Germany and 2% from Norway.

**Twitter**

Twitter seems to be the most cost-effective channel for the 3D Tune-In consortium. Currently, the @3DTuneIn account has 189 followers, and the interactions, visits and followers are increasing at a sustainable rate, although summer has required a greater effort than spring. Table 17 shows the overall progress.

*Table 17. Twitter performance.*

	2015				
	8	9	10	11	12
	M5	M6	M7	M8	M9
Tweets	1	3	4	4	12
Profile visits	46	245	200	139	102
Mentions	1	3	2	5	9
Impressions	28	1541	812	10100	1765

	2016											
	1	2	3	4	5	6	7	8	9	10	11	12
	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20	M21
Tweets	13	15	18	12	23	11	24	28	2	29	27	6
Profile visits	155	100	103	151	83	103	179	152	25	551	558	135
Mentions	6	5	3	18	2	3	6	4	2	21	3	3
Impressions	3244	3954	3286	2197	4234	3495	3724	3828	5639	8253	7264	4759



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	2017											
	1	2	3	4	5	6	7	8	9	10	11	12
	M22	M23	M24	M25	M26	M27	M28	M29	M30	M31	M32	M33
Tweets	20	30	23	20	41	24	37	32	44	46	52	39
Profile visits	168	224	165	109	682	130	149	186	242	230	420	204
Mentions	2	8	9	2	36	7	9	7	16	19	14	29
Impressions	5459	6303	4203	2603	13400	6403	6779	6649	9386	8171	10700	11200

	2018		
	1	2	3
	M34	M35	M36
Tweets	37	35	37
Profile visits	228	185	301
Mentions	21	11	34
Impressions	11100	9501	10400

The overall effect of increasing tweet publication is not so clear at this stage: it seems that tweets publications have not had a real impact on profile visits; profile visits are the most critical factor to increase active followers in Twitter.

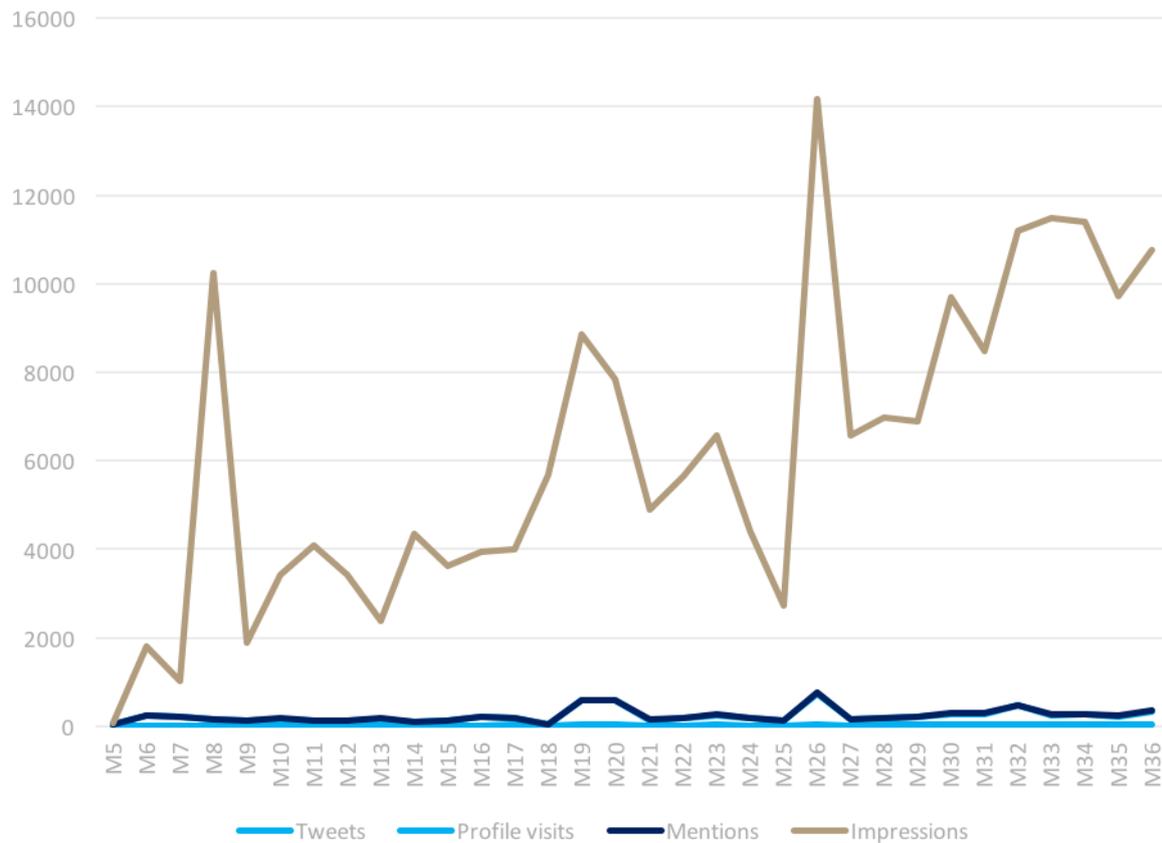


Figure 21. Tweets, profile visits, mentions and impressions.

*Socio-demographic analysis*

58% of the followers were male and 42% female. Most of the followers were from United Kingdom (36%), Spain (16%), United States (11%) and Italy (7%). They were interested in tech news (75%), technology (68%), science news (65%), business and news (60%), politics (50%), entrepreneurship (41%), books, news and general information (34%).

**LinkedIn**

LinkedIn has a professional and academic-focused approach.

*Socio-demographic analysis*

Currently, 38 individuals have joined the group, 3D Tune-In (3D-games for TUNing and lEaRnINg about hearing aids) <https://www.linkedin.com/groups/8409367>.

Table 18. LinkedIn group - Geographical coverage.

Country	Count
Spain	13
UK	10
Italy	6
Germany	2
Denmark	1



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France	1
India	1
Netherlands	1
Saudi Arabia	1
Sweden	1
USA	1

### **YouTube**

The YouTube channel was created on the 15th of July 2015. 9 videos have been published. Up to date, the total watch time spent by the audience is 2819 minutes, with an average view duration of 1 minute and 15 seconds and a total of 2233 views.

#### *Socio-demographic analysis*

Our top 5 audiences were from the UK (39%), Italy (17%), Spain (11%), United States (5.9%) and Germany (3.4%). The top 5 means through which the viewer found our video were externally, which includes the 3DTI website where the YouTube video is accessible through a link (81%), directly through a URL entry (4.8%), as a suggested video on YouTube (4.4%), through channel pages (3.5) and through search terms used by viewers (3.3%).

## 4. Conclusions

This deliverable summarises the dissemination activities of the consortium up to month 36. Table 19 presents a summary of performance indicators where estimations made at the beginning of the project for this period were compared with actual results. Table 20 summarises all other dissemination results.

Table 19. Key Performance Indicators M1-M36 vs. Estimates.

	Estimates (during the project lifecycle, 36 months)	Results (M1-M36)
Journal articles	2	2
Conference publications	3	18
Other publications/articles	0	3
Scientific seminars and demonstrations	3	8
EU-projects networked	3	5
MSc Thesis	3	1 in progress
BSc Thesis	0	2 (1 in progress)
PhD Dissertation	1	1 in progress (Ms C. María Cuevas, UMA)

Table 20. Summary of other dissemination activities.

Dissemination material	Brochure, posters, videos, website, see <a href="#">Section 3.2. Project Materials</a>
Website	Efficiency (visitors, links, bounce rate, etc.), see <a href="#">Section 3.1. Website</a>
Social Media	Scale of success (fans/likes, shares, engagement rate), see <a href="#">Section 3.8. Social Media Activity</a>

Figure 21 summarises estimates of the overall cumulative impact of partners' dissemination activities and the impact measured on the website and social media channels.

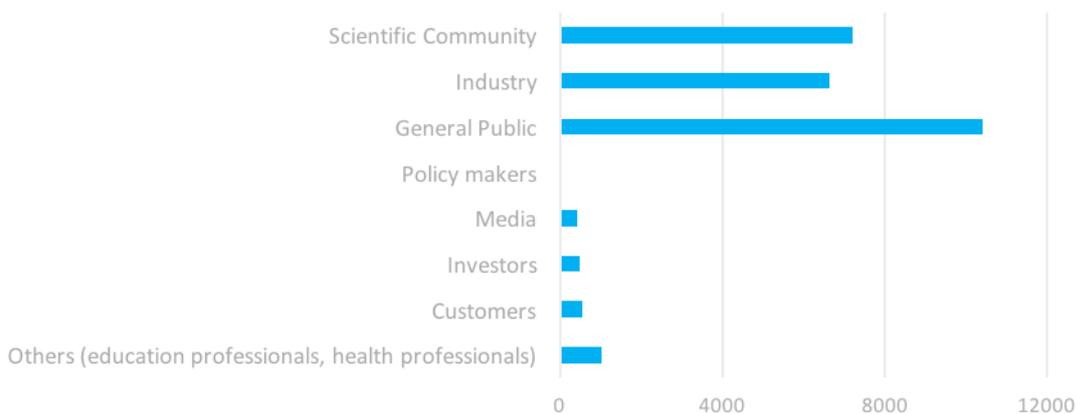


Figure 22. Overall impact estimated.

Of the estimated total audience, academia/scientific community represent approximately 27%, industry players represent 25%, and the general public represent 39%<sup>4</sup>.

<sup>4</sup> Source: Quarterly reports and Activity Reports provided by the partners.



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The consortium has exceeded many of its dissemination targets.