Deliverable

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D4.3 Sign Language Editor

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Dissemination Level

P	Public	X
C	Confidential, only for members of the consortium and the Commission Services	

Abstract:

This document is meant to be a concise user manual for professional users who wish to use ImAc Sign Language Editor.

Revision History

Revision	Date	Author	Organisation	Description
0.1	30-10-2018	Kimia Mirehbar	ANGLA	Template and ToC
0.2	19-11-2018	Kimia Mirehbar Enric Torres	ANGLA	First version
0.3	22-11-2018	Chris Hughes	USAL	Reviewed by USAL
1.0	23-11-2018	Kimia Mirehbar Enric Torres	ANGLA	Final version

Executive Summary

This document is meant to be a comprehensive guide through the professional tools that are dedicated to creating and editing Sign Language accessibility files for 360°/VR videos in an interactive and user-friendly manner for professional users.

Mainly it reports the progress made in T4.3 of ImAc up to the date of submission.

Chapter 1, is an introduction of the scope, purpose and the different inter-relations of this deliverable with the rest of the project's work packages. Chapter 2, describes the components and the structure of the tool. Chapter 3, helps users to install and access the code and interface. Finally chapter 4, presents a user guide of the tool which is meant to clarify the functionality of the interface for professional users who wish to start working with the developed tool.

The deliverable is finished with the list of references.

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Acronym	Description
ACM	Accessibility Content Manager
AD	Audio Description
AST	Audio Subtitles
ST	Subtitles
ED	Editor interface
SL	Sign Language
HMD	Head Mounted Display
WP	Work Package

1. Introduction

1.1. Purpose of this document

This document provides an overview of developed sign language tools for immersive content and it corresponds to T4.3 (Sign Language) of the ImAc project. It accompanies the software products and describe their main features and their availability. The main objective is to make sure that the features and functionalities of the Web SL Editor is clear to the professional user after finishing reading this document and as a result, is prepared to start working with the tool.

1.2. Scope of this document

This deliverable has means to be a full description for the progress made in T4.3 and also a complete guide for professional users who wish to install and access the interface and to start working with developed tool in this task. This deliverable accompanies the software and plays an informative role.

1.3. Status of this document

This is an iterative document that reflects the status of T4.3. It aims to be a guide through the progress made in the development of the Web SL Editor of the ImAc platform. It will be updated whenever new development milestones demand it. This is the first version of D4.3 (M14), the final version is foreseen in M24.

1.4. Relation with other ImAc works

Different work packages of ImAc are related to each other. Illustration 1 shows the relation between T4.3 and other ImAc activities.
As it can be seen the task receives its requirements and architecture from WP3 and then it is developed alongside other WP4 tasks (T4.1 and T4.2). Finally the general report of the WP is gathered and presented in D4.5 of the ImAc that is updated gradually as the project goes ahead.

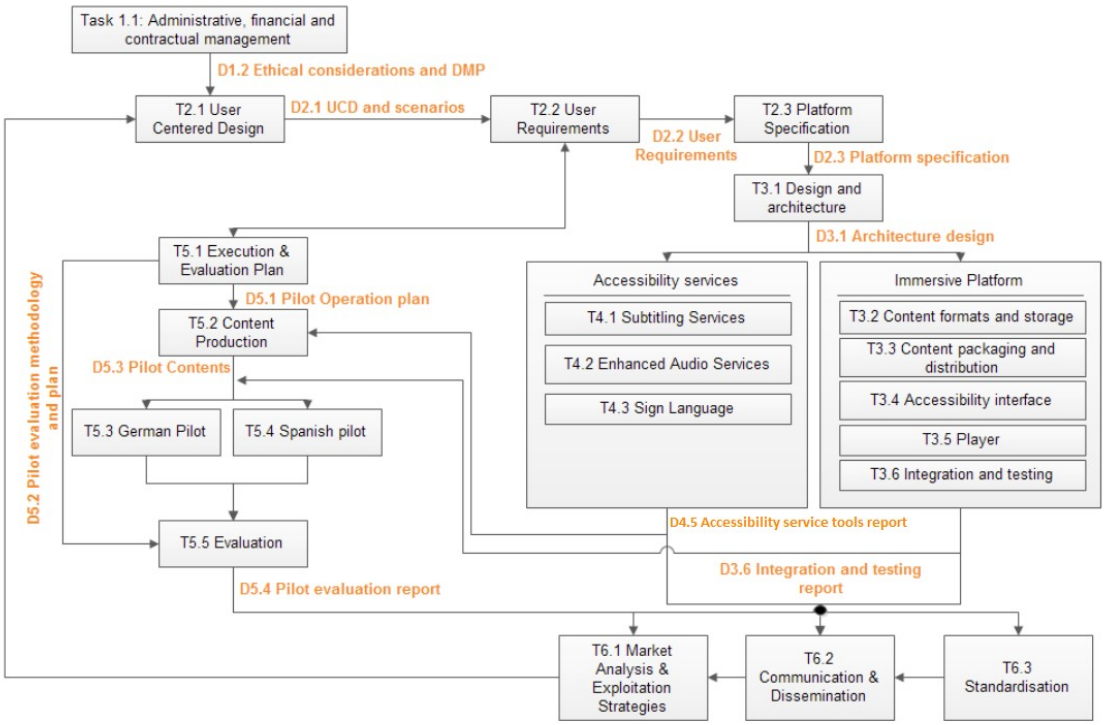


Illustration 1: Dependencies between tasks and deliverables of ImAc

2. Component description

2.1. General Description

As mentioned before, the document reports the progress made in T4.3, this task follows the same pattern as T4.1 and T4.2 and the activities are harmonised.

The Web SL Editor does not have any dependencies on any other tool but it is integrated in the same environment as Web ST and AD Editors. More information on how Web ST and AD Editors work are available respectively in D4.1[1] and D4.2[2].

Also a complete report on how WP4 has made progress during first iteration is found in D4.5 of ImAc[3].

2.2. Architecture

As seen in 2.1 the different editors are independent from each other, but they are implemented on the same platform so they share some characteristics. Illustration 2 shows how different editors are organised.

The following illustration (Illustration 2) shows how a professional user can have access to three different accessibility editors via the same platform (Editor interface) depending on their type of work. A detailed user guide with graphs and images is presented in chapter4.

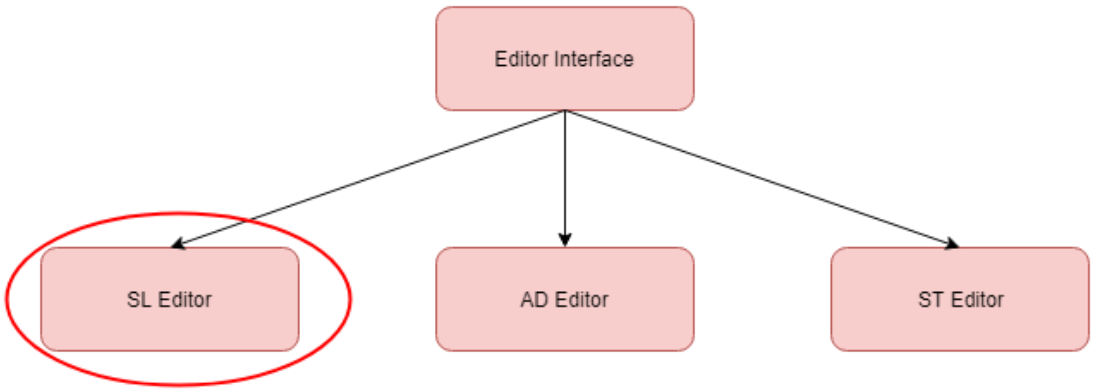


Illustration 2: ED architecture

3. HOW TO

3.1. INTRODUCTION

This chapter describes the installation process and the user interface of the Web SL Editor. The software is not publicly available.

The editor allows users to produce and edit SL accessibility files for 360° media content. The professional user is able to add positional information in 360° scene for every SL segment. This information is required by the IMAC player in order to provide icons (tests were conducted with arrows and a compass), that indicate a speaker's position in the scene.

3.2. HOW TO INSTALL

- **Access**

  In order to install the ImAc Editor interface, first we need to access the server via SSH (console)

  - **Server**: imac.gpac-licensing.com
  - **User & pass:** to be asked from server administrator

- **Installation**

  We have installed a Linux operating system, Debian 9 distribution. We have used the 'root' user to install and set everything.

- **Packages**

  We need to install some packages into the server in order to have all the tools and programs to run it:

```
apt-get update

apt-get install vim screen rsync ntp less man net-tools apache2 php php7.0-
mysql php7.0-curl php7.0-gettext php7.0-mbstring php7.0-xml openssl mysql-
server

php7.0-odbc curl apt-transport-https php7.0-sybase freetds-common libsybdb5
exim4
```

  This will install the main tools for the system:

  - Apache Web Server
  - MySQL Database (MariaDB)

- PHP 7.0 engine
- System Tools

Each package has to be configured.

Note: we will use “Vim” editor to edit each file. In order to save and exit: “ESC → :wq”

- **Apache**

  Configure the project, its locations and parameters:

```
vim /etc/apache2/sites-available/acm_deliverable_v3.conf
```

```
Alias /acm_deliverable_v3/ /var/www/content_manager_deliverable_v3/html/

<Location /acm_deliverable_v3/>
  order deny,allow
  deny from all
  allow from 172.19.192.0/255.255.255.0
  allow from 127.0.0.1/255.255.255.0
  allow from all
  Options Indexes FollowSymLinks MultiViews
  php_flag magic_quotes_gpc Off
  php_flag short_open_tag Off
  php_flag register_globals Off
  php_value upload_max_filesize 5G
  php_value post_max_size 5G
  php_value memory_limit 2G
  php_value max_execution_time 600
  php_value max_input_time 60
  php_value max_file_uploads 50
  AddDefaultCharset UTF-8
  php_value session.gc_maxlifetime 14400
  ErrorDocument 404 /acm_deliverable_v3/404_not_found.php
</Location>
```

```
vim /etc/apache2/sites-available/editor_deliverable_v3.conf
```

```
Alias /editor_deliverable_v3/ /var/www/content_manager_deliverable_v3/html/
ed/

<Location /editor_deliverable_v3/>
  order deny,allow
  deny from all
```

```
  allow from 172.19.192.0/255.255.255.0
  allow from 127.0.0.1/255.255.255.0
  allow from all
  Options Indexes FollowSymLinks MultiViews
  php_flag magic_quotes_gpc Off
  php_flag short_open_tag Off
  php_flag register_globals Off
  php_value upload_max_filesize 5G
  php_value post_max_size 5G
  php_value memory_limit 2G
  php_value max_execution_time 600
  php_value max_input_time 60
  php_value max_file_uploads 50
  AddDefaultCharset UTF-8
  php_value session.gc_maxlifetime 14400
  ErrorDocument 404 /editor_deliverable_v3/404_not_found.php
</Location>
```

Now we have to reload the Apache Web Server in order to apply this configuration.

```
a2ensite acm
a2ensite editor
service apache2 reload
```

- **PHP**

  Just in order to disable some logs from the Apache server log trace.

```
vim /etc/php/7.0/apache2/php.ini
```

```
error_reporting = E_ALL & ~E_DEPRECATED & ~E_STRICT & ~E_NOTICE
```

- **CODE**

  A zipped file will be provided for the installation:

```
content_manager_r28.tgz
```

Navigate to the web server code folder:

```
cd /var/www/
sudo mkdir content_manager_deliverable_v3
sudo chown www-data:www-data content_manager_deliverable_v3
sudo chmod 775 content_manager_deliverable_v3
cd content_manager_deliverable_v3
```

Unzip the code file:

```
tar xvfz content_manager_rXX.tgz
```

Configure the path in the following file

```
vim html/includes.inc.php
```

```
<?php
require_once("/var/www/content_manager_deliverable_v3/includes/connection.i
nc.php");?>
```

Configured paths and database parameters in the following file:

```
vim includes/config-local.inc.php
```

```
//PATHS
define("PATH_ROOT","/var/www/content_manager_deliverable_v3");
//ROOT
define("ROOT_PAGES","/acm_deliverable_v3");
define("ROOT_PAGES_ED","/editor_deliverable_v3");
//BBDD
$bbdd_usuari='imac';
$bbdd_pwd='aYooph8ietoo';
$bbdd_servidor='localhost';
$bbdd_bbdd='content_manager_deliverable_v3';
$bbdd_driver='mysqli';
```

- **MYSQL**

  It's actually a MariaDB 10.1.26. We need to add the user "imac" and import the database:

```
mysql -u root -p
```

```
GRANT ALL PRIVILEGES ON *.* To 'imac'@'%' IDENTIFIED BY 'aYooph8ietoo';
FLUSH PRIVILEGES;
exit;
```

```
cd /var/www/content_manager_deliverable_v3/bbdd

mysql -u imac -p content_manager_deliverable_v3 < content_manager_r28.sql
```

Type the password in order to import.

- **Crontab**

  In this file we will Configured the Linux Task Manager to execute periodically some scripts:

```
vim /etc/crontab
```

```
#CONTENT_MANAGER
*        *                *        *        *                        root
/var/www/content_manager_deliverable_v3/scripts/generate_transcoding.php
0       0                           *       *       *                root
/var/www/content_manager_deliverable_v3/scripts/clean_transcodings.php
```

3.3. How to access the installed interface

Once we have everything installed and set, we should be able to access the web interface normally. To access the current installed version for this delivery:

1. Open your preferred browser (Chrome and Firefox work better with the interface).
2. Browse to the path where the it has been installed: http://imac.gpac-licensing.com/editor_deliverable_v3/
3. The main ImAc login page will appear:

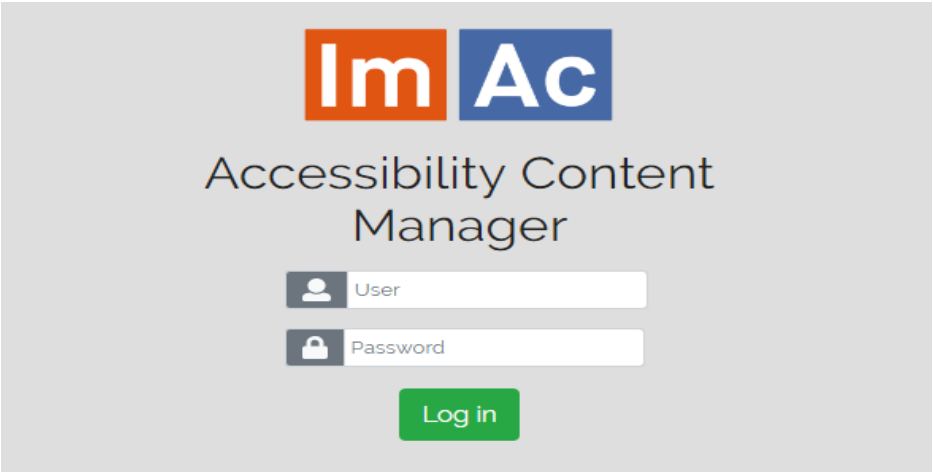


Illustration 3: Login page

4. User manual

In this chapter, we introduce a detailed user manual of the ImAc Web SL Editor. In the first sub-section we elaborate functionalities of the tool step by step and in the second one we elaborate a scenario of creating/editing a sign language accessibility file from scratch.

This approach helps the reader to have a better understanding of the functionality of the editor.

4.1. User guide

In this chapter, a user guide is available for professional users who have just started using ED and Web SL Editor. The sequence is step by step and is started from the moment in which the user logins to the platform.

4.1.1. Editor interface user guide

1. Login

User accesses the Editor Interface via the web browser (illustration 3) and enters username and password.

2. Navigation on main page

When inside the platform, the user is able to see ED. A window with the list of assigned tasks (sign language tasks for the purpose of this document) to the user with their corresponding videos appears (Table 1).

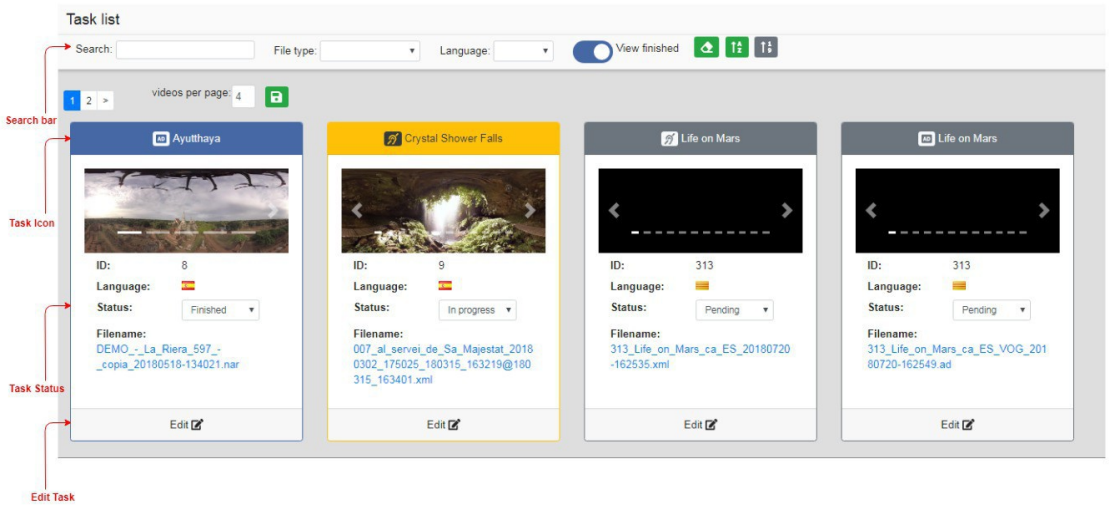
Navigation elements on the Editor interface	
	
Search bar	With this tool, user can search through their assigned tasks and view them alphabetically, based on being finished or not, etc.
Task icon	The icon shows the type of task we are dealing with: it can be either a subtitling, a sign language or an audio description task. For the purpose of this document we will only focus on the sign language tasks.
Task status	The user can change the status of each task to: pending, in progress or finished.
Edit task	By clicking on this button, the user is redirected to the Web SL Editor.

Table 1: Navigation elements on the Editor Interface

4.1.2. Web SL Editor user guide

1. **Hardware system requirements**

Before starting a SL file creating/editing task, it is necessary to take into account the minimum hardware the signer needs.

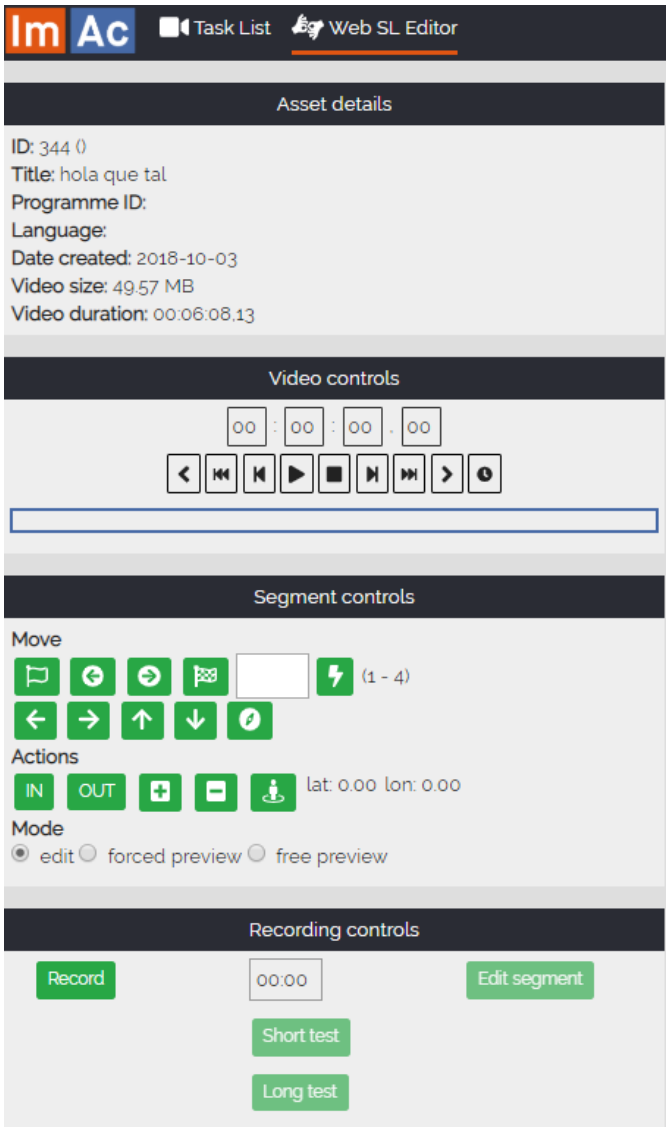
it is required to have a microphone and a webcam installed on a computer beside the editor interface.

Also it is required to have a good Internet bandwidth and graphics card for the fact that the contents produced and edited are videos which require quite a lot of data process and transfer.

2. **Web SL Editor functionalities**

By clicking on 

the user is redirected to the corresponding editor. When entered, on the left side of the page, the functionalities and tools that are available for edition purposes are seen in illustration 4.



Asset details

Basic features of the asset

Video controls

See table 2

Segment controls

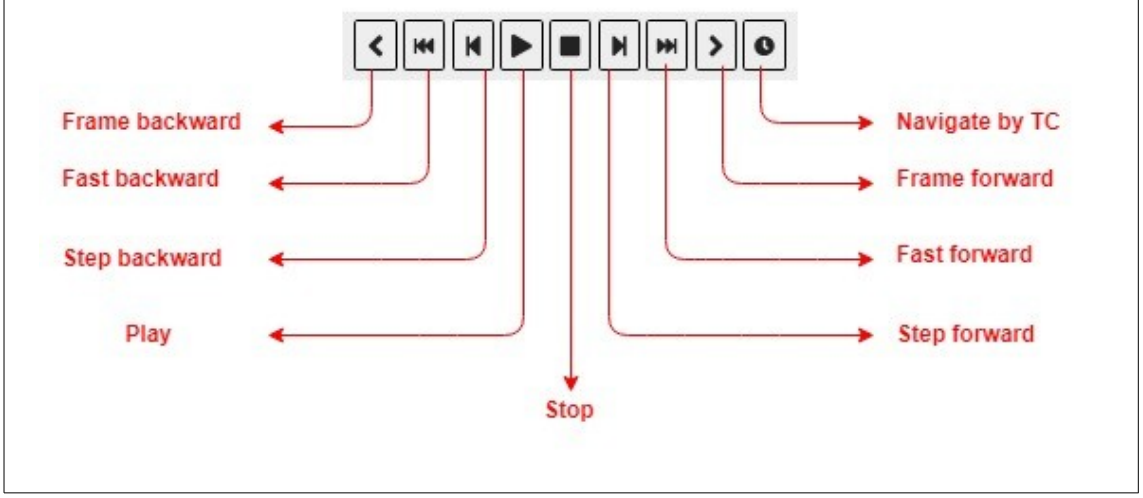
See table 3 – 5

Recording controls

See table 6 – 7

Illustration 4: Left section of Web SL Editor

The following tables shade light on each of the subsections mentioned above:

Video controls


Frame backward	This button makes the video go backwards frame by frame (Alt+left).
Fast backward	This button makes the video go backwards with a fast speed (Alt+F8).
Step backward	This button makes the video go backwards with a slow speed (Alt+F7).
Play	This button plays and pauses the video (Alt+F2).
Stop	This button stops the video (going to the beginning) (Alt+F3).
Step forward	This button makes the video go forward with a slow speed (Alt+F6).
Fast forward	This button makes the video go forward with a fast speed (Alt+F5).
Frame forward	This button makes the video go forward frame by frame (Alt+right).
Navigate by TC	With this button, you can go to a specific time code in the video that you can indicate manually (Ctrl+Alt+T).

Table 2: Video controls buttons

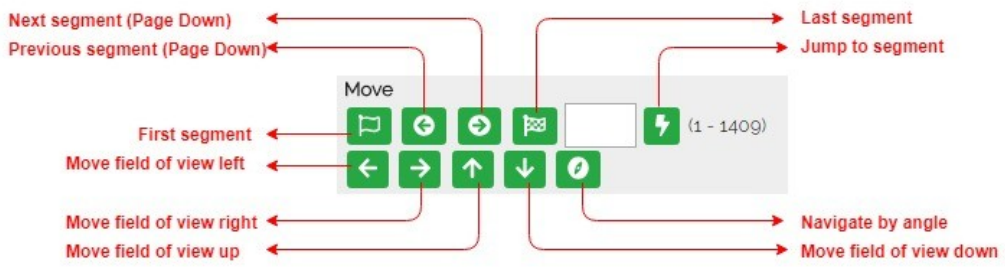
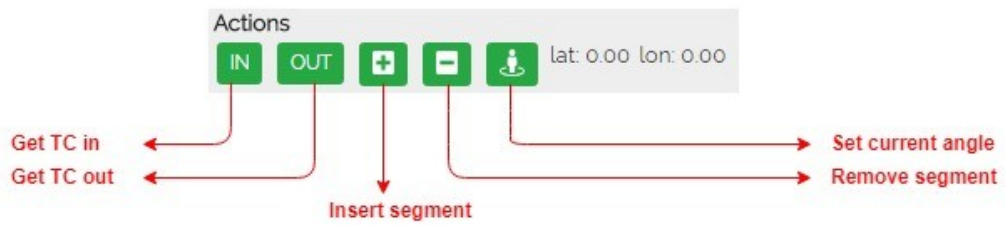
Segment controls – subsection “Move”	
	
First segment	This button takes you to the first sign language segment.
Previous segment	This button takes you to the previous sign language segment in relation to your current position (Page Down).
Next segment	This button takes you to the next sign language segment in relation to your current position (Page up).
Last segment	This button takes you to the last sign language segment.
Jump to segment	This button takes you to a specific sign language segment by entering its number.
Move field of view left	With this button you move to the left in the spherical video (Ctrl+Alt+left).
Move field of view right	With this button you move to the right in the spherical video (Ctrl+Alt+right).
Move field of view up	With this button you move down in the spherical video (Ctrl+Alt+up).
Move field of view down	With this button you move down in the spherical video (Ctrl+Alt+down).
Navigate by angle	With this button you can directly move the Field Of View to a specific angle of the video, instead of moving through the video manually with the previous options (Ctrl+Alt+A).

Table 3: Segment controls – subsection "Move"

Segment controls – subsection "Actions"	
	
Get TC in	This button sets the In Time Code for the sign language segment (the moment of the video in which the sign language segment is

	going to play—Shift+Page up).
Get TC out	This button sets the Out Time Code for the sign language segment (the moment of the video in which the sign language segment should be finished—Shift+Page down). It is used as a window reference for the recording of the corresponding video.
Insert segment	This button is useful for when you want to insert a new sign language segment between existing ones (Ctrl+Insert).
Remove segment	As the name suggests, this button removes the selected sign language segment (Ctrl+Delete).
Set current angle	This button sets an angle for current sign language segment. It is important for the user to know what the current angle means exactly. The current angle has great importance because we are working in 360° environment and sometimes the viewer needs to know where the exact angle of the signer is in order not to get lost. The professional user has the possibility to tie a segment to a special angle for some types of SL where signer location is required. Also, at the bottom left of the video, there is an arrow showing the direction of the current speaker (for edition purposes only). This angle is specified by latitude and longitude (Ctrl+A).

Table 4: Segment controls – subsection "Actions"

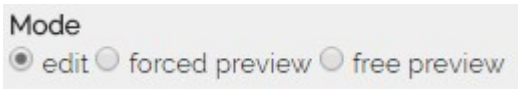
Segment controls: section "Mode"	
	
Edit	This mode is used during the SL editing process. The user can move freely through the SL segments and edit them as they wish with the tools described in previous parts.
Forced preview	This mode is used for the verification of the sign language task. segments are bound to the video time code, but angle is not. It means that navigating through the video using the "video controls" buttons you can also move angle (it is not fixed to the signer), so it makes the verification process more real as if playing back the video with sign language using HMD.
Free preview	This mode is used for the verification of the sign language segments. This verification mode makes it easier for the signer as the video will change angle when needed during the playback of the video. Segments and angle are bound with the video. It means that navigating through the video using the "Video controls" buttons, the angle of the field of view will change automatically to the speaker location to ease the verification process.

Table 5: Segment controls – subsection "Mode"

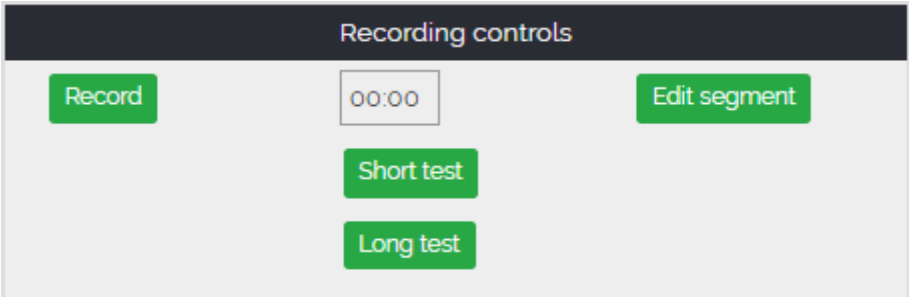
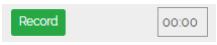
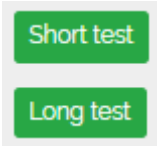
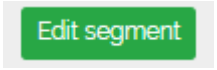
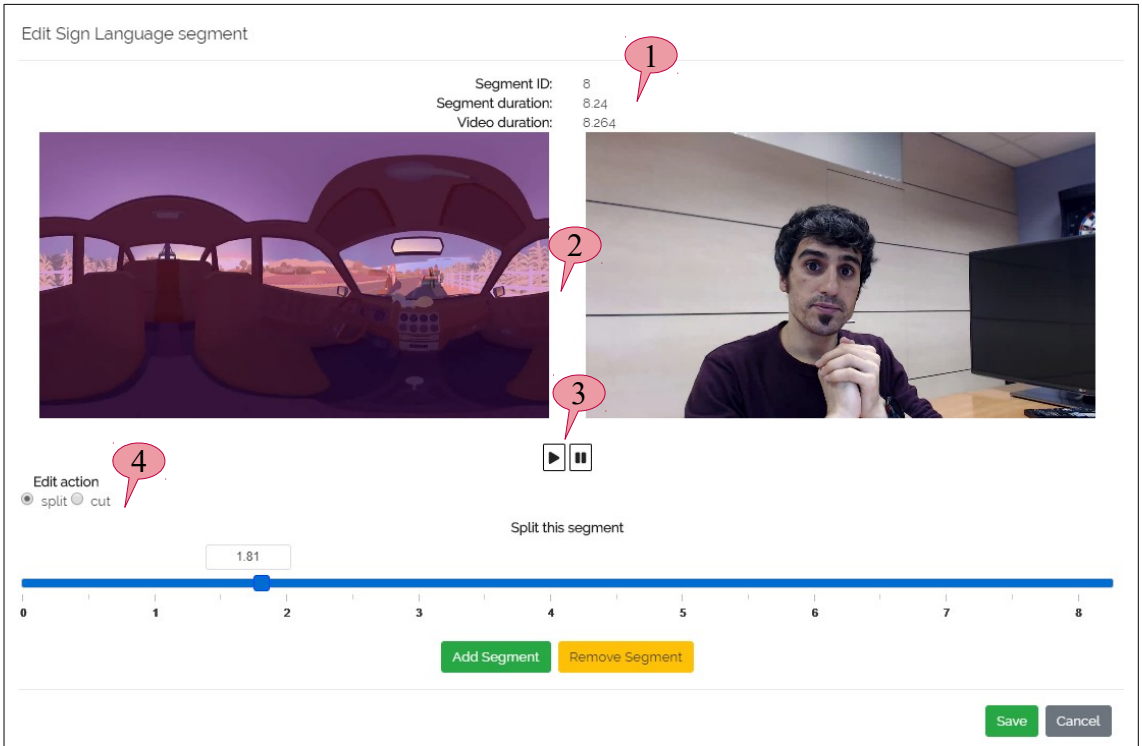
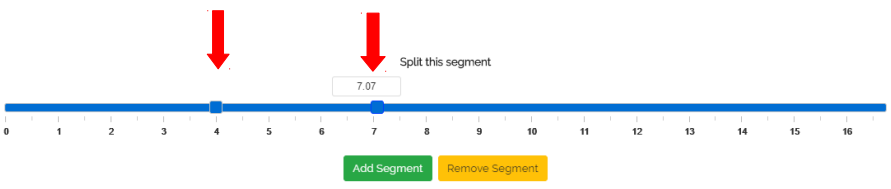
Recording controls	
	
	First, the user is able to record the video for the corresponding sign language segment by pressing the "Record" button. Also a timer has been provided to check and compare the segment and SL video durations and to track the unwanted differences.
	Short test: it performs a test 2 seconds before the TC In of the sign language segment. Long test: it performs a test 5 seconds before the TC Out of the sign language segment.
	This button takes the user to a new window in order to edit the current segment. The details of such window is presented in table 7.

Table 6: Recording controls

Edit segment window



1	This is the general specifications of the selected segment.
2	The video at the left, is the one which we want to put sign language for. The video on the right, is the video segment we have recorded previously for the sign language and it is being edited now.
3	Play/pause the video and its corresponding synchronized segment.
4	Edit action corresponds to the type of the edition you want to apply to your segment: Split: it splits the segment into different ones, when you press “Add segment” and then you can edit or remove these divided segments. The blue line is the time slot of the segment and its start and end point depend on the TC in and TC out of the segment which has been specified earlier. Red arrows show two time slots in which the segment is divided into them. You can add as many as segments you want. The time slot would look like this after dividing the segment into two different ones: 

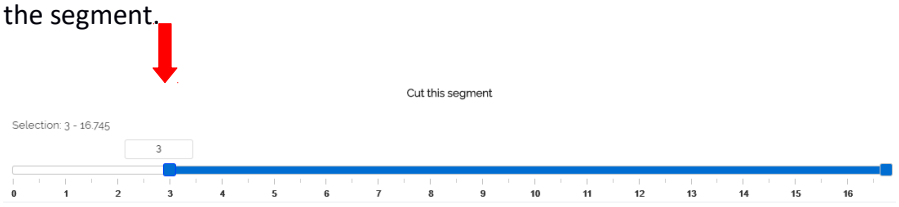
	Cut: in this mode the “Add segment” and “Remove segment” buttons disappear and it is used when you want a shorter version of the video segment. Selection means the time slot which we choose for our shorter version of the segment and it can be chosen from the beginning or the end of the segment or both. In the image below, the duration of the shortened segment will be the blue line only and the white line will be omitted from the segment. 

Table 7: Edit segment window

3. Preview window

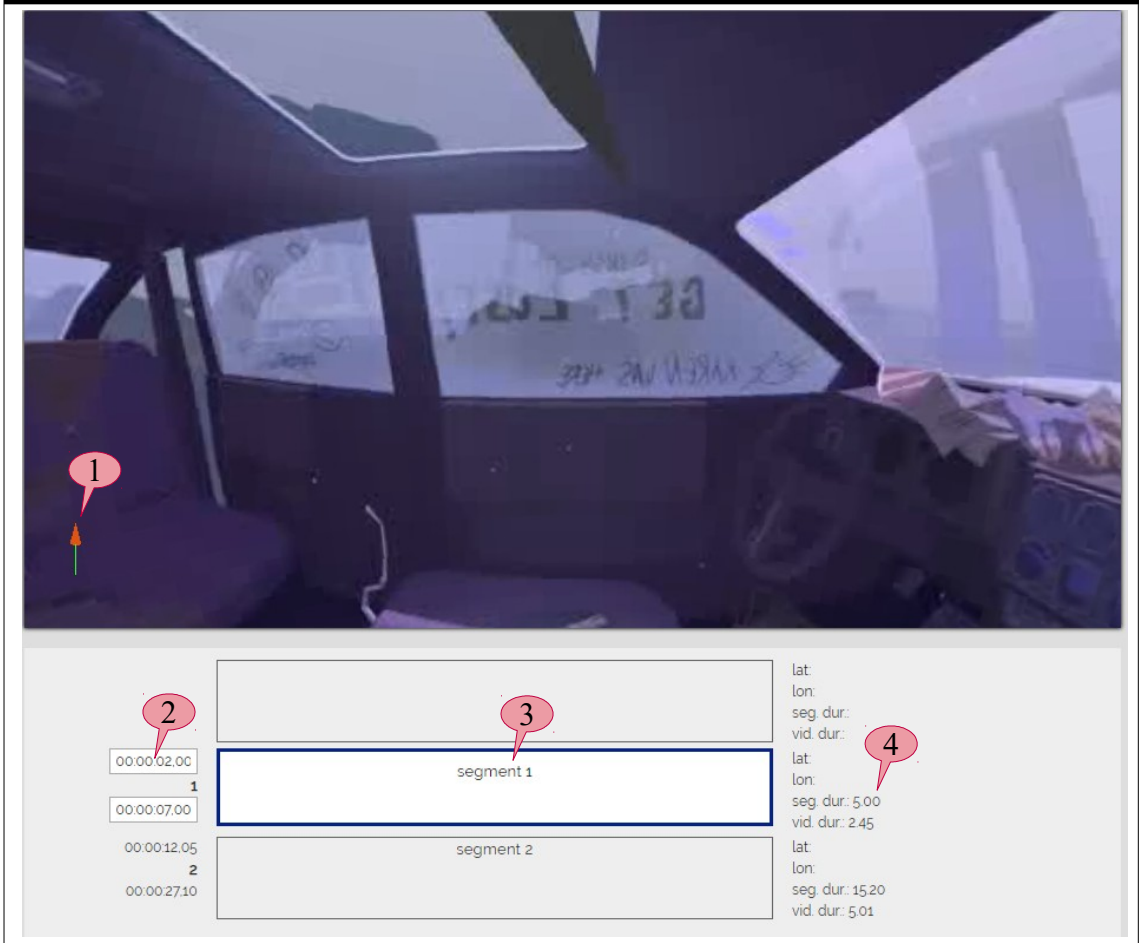
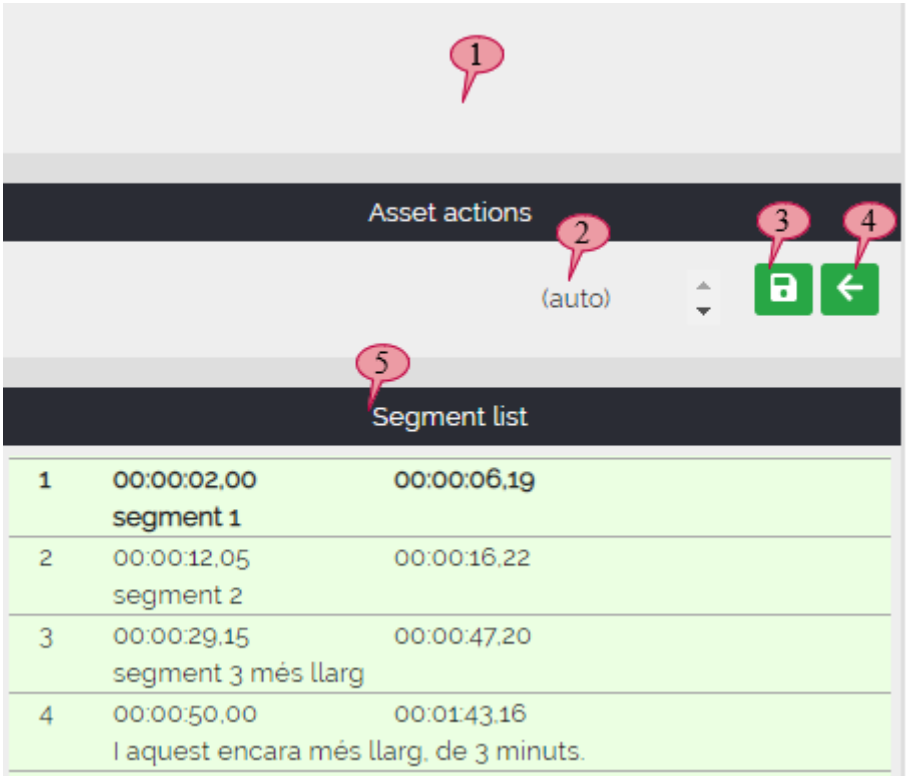
Preview window elements	
	
	On the top the main video itself is previewed while being worked on.
1	At the left bottom of the video, a small red arrow is shown. This arrow shows the current angle view of the viewer.
2	The TC In and TC Out for the corresponding sign language segment and also the assigned number are displayed.
3	In this area, comments on the segment is written.
4	Right of the text editing area, four parameters are displayed: “lat” and “lon” correspond to the latitude and longitude of the selected segment angle. “seg. dur” is the current sign language current segment TC in and TC out time difference which is put manually by the signer before recording the sign language video. “vid. dur” is the actual duration of the sign language video that is going to be recorded by the signer after putting the TC in and TC out.

Table 8: Preview window elements

4. Asset action, webcam and segments list

Asset actions, webcam and segments list


1	At the top of the section, the segment video appears in the case of existing a webcam.
2	This toggle button lets the user put the page on auto-save mode.
3	This button saves the current progress and after pressing it the date and hour is shown as the last save date.
4	This button takes the user back to the ED main page.
5	The segment list contains the sign language comments on each SL segment, time codes and a sign language segment number.

Table 9: Asset actions and segments list

5. Save SL file

When user finishes the work, they can save it with a button located in the right menu and then go back to the Editor Interface by pressing the ED button on the top right.

4.2. Scenario of a sign language edition from scratch

As mentioned in the previous sections, ImAc is a user-centric project which has specified the user requirements using different user scenarios in WP2. Therefore, we elaborate the functionality of the tool with a scenario in which a professional user wants to edit/produce a sign language file for a 360°/VR video using the Web SL Editor from scratch.

Imagine a professional user wants to produce a sign language accessibility file for a specific 360°/VR video which has been assigned to them in advance in ACM. In the Web SL Editor of ImAc it is possible to do this in an efficient manner.

Before starting to edit, the user has to access the Editor interface and select the desired SL task, then the Web SL Editor appears and the procedure is as below:

1. First step is to prepare the segments, that is, the user will have to type comments as text and set the TC IN (Shift+Page Down) and TC OUT (Shift+Page Up), while playing/pausing the video (Alt+F2), or frame by frame as well (Alt+left/right).
2. As we are working in 360° we need an angle for each segment, the user can search for desired angle (Ctrl+Alt+arrows) or by moving the mouse over the video and set it (Ctrl+A).
3. Once the segments are prepared (but without the corresponding video), the user will record the first video segment using the “Record” button. A timer will appear, so that the user can prepare for the segment recording. Once finished, the user will click on the “Stop” button to stop the recording procedure.
4. Then the user can check the current segment video recording by clicking either on “Short test” or on the “Long test” buttons.
5. The user can also record the segment again if needed.
6. After finishing, the user can edit the recorded segment as explained in table 7, that is, the user can cut the video into several segments (split option in the edit segment window) and then adjust the beginning and end of each video segment (cut option in the edit segment window).
7. Then the user can check the edited or new segments by clicking either on “Short test” or on the “Long test” buttons.
8. The user can also record one of the segments again if needed.
9. Now, the user can repeat the same procedure again by pressing “Page down” from the last edited segment.

It is recommended that after finishing the user checks the work in one of the verifying modes (“Forced preview” or “Free preview”) in order to verify everything is right.

Also, user has the possibility to remove or insert segments after finishing the work.

Appendix: Editing Shortcuts

Shortcut button	Functionality
Alt+F2	Play
Alt+F3	Stop
Alt+F5	Fast backward
Alt+F6	Step backward
Alt+F7	Step forward
Alt+F8	Fast forward
Alt+Left	Frame backward
Alt+Right	Frame forward
Shift + Page Up	Get TC in
Shift + Page Down	Get TC out
Ctrl + A	Set current angle
Page Down	Next segment
Page Up	Previous segment
Ctrl + Alt + Left	Move field of view left
Ctrl + Alt + Right	Move field of view right
Ctrl + Alt + Up	Move field of view up
Ctrl + Alt + Down	Move field of view down
Ctrl + Alt + T	Navigate by TC
Ctrl + Alt + A	Navigate by angle
Ctrl + Insert	Insert segment
Ctrl + Del	Delete segment
Shift + F2	Record video segment
Shift + F3	Short test
Shift + F4	Long test
Shift + F5	Edit segment

References

[1] Peter tho Pesch. D4.1 Subtitle Production Tool (ImAc), 2018
[2] Peter tho Pesch. D4.2 Audio Production Tool (ImAc), 2018
[3] Kimiasadat Mirehbar, Enric Torres Feixas. D4.5 Accessibility Services Tools Report (ImAc), 2018

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