



Ecosystem infrastructure for smart and personalised inclusion
and PROSPERITY for ALL stakeholders

D204.3 Interfaces to allow captioning by users and communities that primarily use phones and tablets

Project Acronym **Prosperity4All**
Grant Agreement number **FP7-610510**

Deliverable number **D204.3**
Work package number **WP204**
Work package title **Media and Material Automated /
Crowdsourced Transformation
Infrastructures**

Authors **Dean Jansen, PCF**

Status **Final**

Dissemination Level **Public/Consortium**

Delivery Date **28-11-2016**
Number of Pages **17**

Keyword List

Collaboration, real-time, and user presence

Version History

Revision	Date	Author	Organisation	Description
1	26/10/2016	Dean Jansen	PCF	Initial Draft
2	3/11/2016	Achilleas Achilleos	UCY	Review I: typo and rephrasing suggestions to improve readability
3		Dean Jansen	PCF	Incorporated feedback
4	30/11/2016			Incorporated feedback from consortium & coordinator review

Table of Contents

Executive Summary	5
1 Contribution to the Global Architecture	6
2 Introduction	8
3 Goals & Targets	Fehler! Textmarke nicht definiert.
3.1 Mobile Form Factor Challenges	Fehler! Textmarke nicht definiert.
3.2 Developing for Low-to-no Bandwidth Situations.....	Fehler! Textmarke nicht definiert.
4 Implementation.....	Fehler! Textmarke nicht definiert.
4.1 Mobile Usability	Fehler! Textmarke nicht definiert.
4.1.1 Mobile Affordances.....	Fehler! Textmarke nicht definiert.
4.1.2 Primary Hot-key Buttons.....	Fehler! Textmarke nicht definiert.
4.2 Intermittent Bandwidth	Fehler! Textmarke nicht definiert.
4.2.1 Auto-save and Restore	Fehler! Textmarke nicht definiert.
4.2.2 Download Subtitles on Disconnection	Fehler! Textmarke nicht definiert.
4.2.3 Upload Subtitles Inside Editor	Fehler! Textmarke nicht definiert.
5 Conclusion.....	15
Annex I: Glossary	16

List of Figures

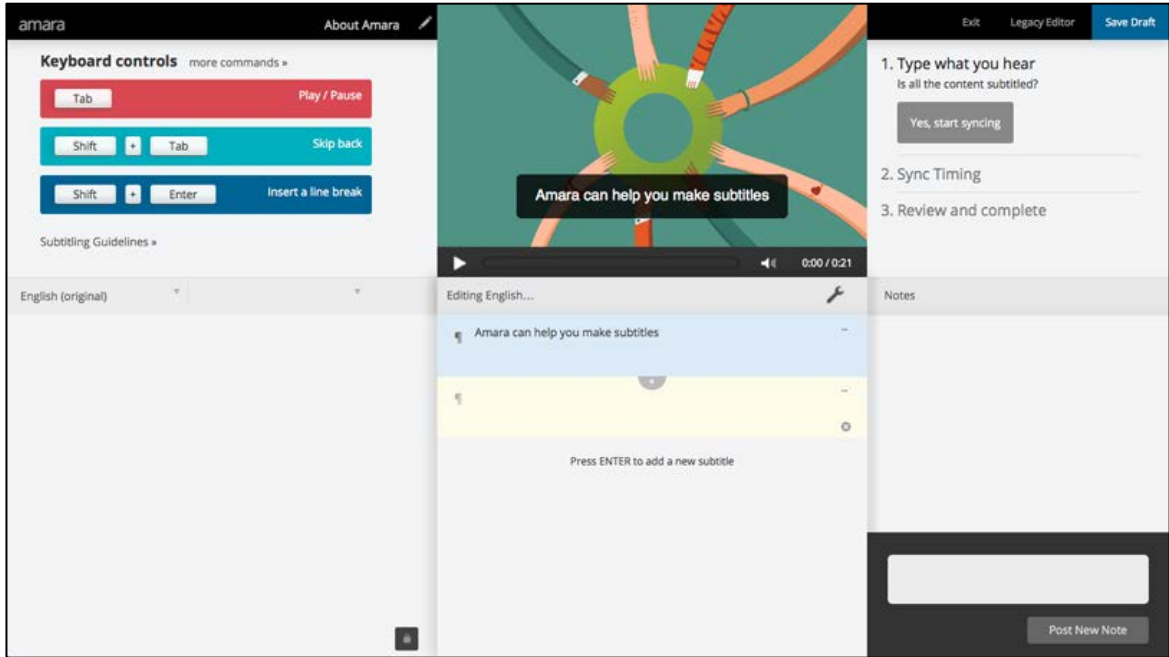
Figure 1: UE caption & subtitle editor.....	4
Figure 2: Overall picture of Prosperity4all, with WP204 highlighted	5
Figure 3: Hover vs Toggle on Mobile.....	11
Figure 4: UE Hotkey Buttons	12
Figure 5: The “Unsaved backup” Dialog.....	13
Figure 6: The “Error saving subtitles” Dialog	13
Figure 7: The “Upload Subtitles” Dialog.....	14

Executive Summary

The Participatory Culture Foundation (PCF) hosts and develops Amara, which is a platform for crowd/community created captions and translated subtitles. The Unisubs Engine (UE) undergirds Amara, which is an open source platform that will be included as an infrastructural building block in the P4A's DeveloperSpace.

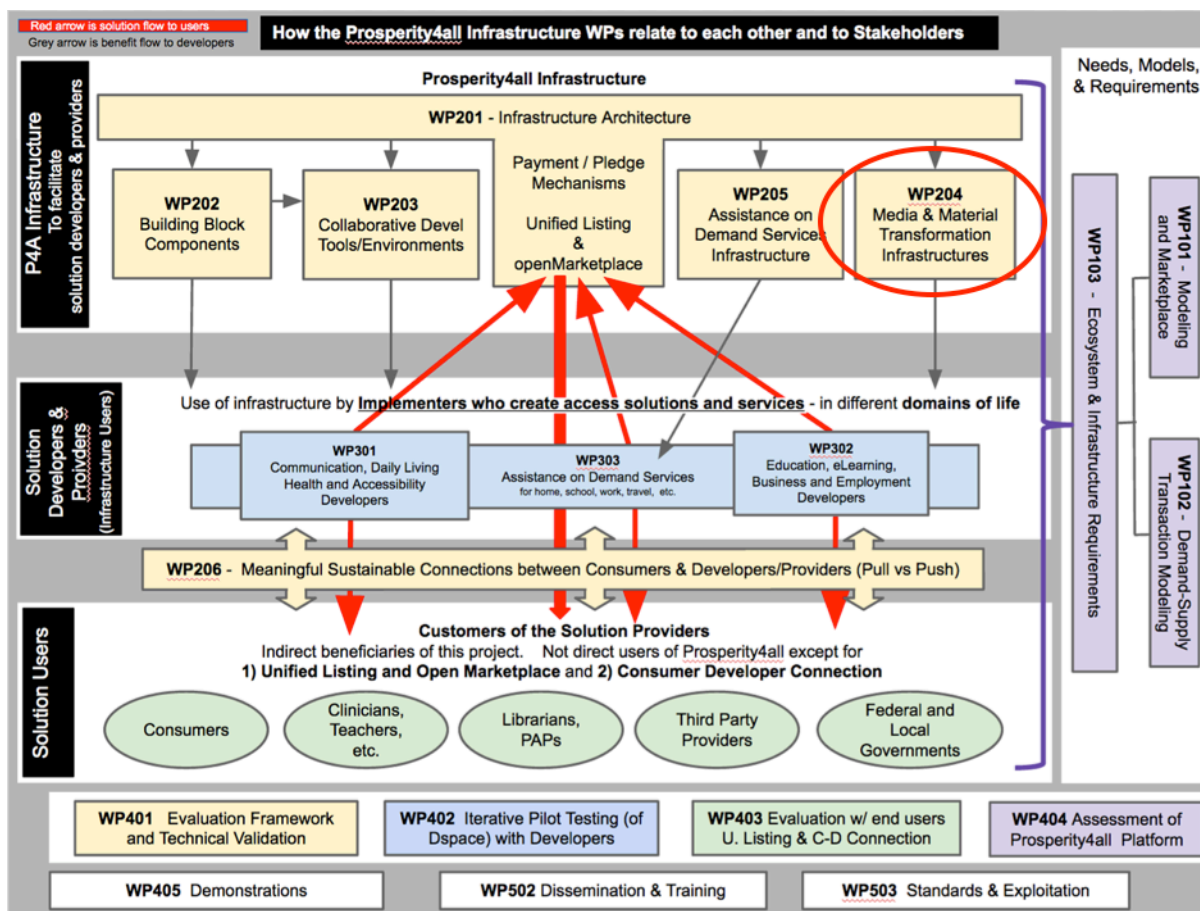
This document provides a summary of improvements made to the UE that will facilitate better collaboration between people who are captioning and translating videos, with the ultimate goal of making captioning easier and less costly. T204.6 furthers this goal by creating mobile focused interfaces, including the UE caption and subtitle editor (see Fig. 1). These efforts enable a large portion of people around the globe to engage with community-driven captioning and subtitling efforts, anytime the UE is deployed by a person, company, or other organization.

Figure 1: UE Caption & Subtitle Editor



1 Contribution to the Global Architecture

Figure 2: Overall Picture of Prosperity4all, with WP204 Highlighted



The UE is an infrastructure module available in the P4A Infrastructure. It provides the infrastructure or platform that can be used by both vendors and communities to caption and/or translate videos for greater accessibility. The source code and infrastructure for the UE will be available through P4A’s DeveloperSpace.

Prior to being part of the P4A consortium, PCF launched Amara as a prototype, which evolved into an award-winning platform for community-driven captions and subtitles. Although the underlying software (i.e., UE), was open source since the beginning, it was not particularly modular or easy to extend.

The goal, improving the UE as a member of the P4A consortium, is to increase the platform’s flexibility, modularity, compatibility, and ease-of-use ultimately driving broader and more cost-effective accessibility for video and the ability for other developers to add other

enhancements (see Fig. 2). The improvements to the UE are being made as improvements to the code and documentation (described in D204.1), features for better real time collaboration (in D204.2), additional features for mobile focused interfaces (in D204.3), and compatibility with additional video services and formats (to come in D204.5).

2 Introduction

The purpose of the enhancements in WP204 are to make the Unisubs Editor (UE), which is the open source software and platform that undergirds Amara, more powerful for any developer or organization that would like to engage a community for creating captions or subtitles, with the ultimate goal of making captioning easier and less costly. The enhancements in T204.6 were performed for making mobile focused interfaces within UE, for use with phones and tablets.

After some initial research, via feedback from UE's users that regularly use mobile devices, the PCF team identified two key aspects to creating a better mobile focused interface and experience. The first involves enhancements to the UE editor interface to better accommodate mobile users, who face the constraints around tablet and phone interfaces. The second key area of improvement is around management of connectivity issues and in low-to-no bandwidth situations. Because mobile devices are especially prevalent in areas with lower connectivity and bandwidth, according to the Akamai State of the Internet report, the team agreed that this second area would be an important area of focus for T204.6¹.

With these challenges in mind, the enhancements for UE for T204.6 include mobile usability as well as seamless operation in low-to-no bandwidth situations. The combination of these two approaches enabled optimization of the UE's experience for users, in a variety of bandwidth situations on a multitude of devices, making the UE platform more inclusive and powerful, especially in the global context.

¹ Akamai State of the Internet report, Q2 2016 <https://www.akamai.com/us/en/multimedia/documents/state-of-the-internet/akamai-state-of-the-internet-connectivity-report-q2-2016.pdf>

3 Goals & Targets

As noted above, feature enhancements for T204.6 focused on mobile and low-to-no bandwidth usability. The two subsections below review the goals and targets for the UE platform enhancements.

3.1 Mobile Form Factor Challenges

Web applications for mobile phones present a variety of challenges in terms of the form factor, including screen size, browser limitations, lack of mouse hover state, a limited keyboard, no ability to use keyboard shortcuts, etc.² These form factor challenges in mobile devices can be overcome with a variety of strategies, including: thoughtful User eXperience (UX) design³ and support for open multimedia formats (which UE already accomplishes). The goal for T204.6 is to strategically optimize the UE caption and subtitle editor for usability on mobile devices.

3.2 Developing for Low-to-no Bandwidth Situations

In addition to optimizing the User Interface (UI) for mobile compatibility, it is also important to ensure that the UE caption and subtitle editor performs well in a variety of situations where there may be degraded or zero bandwidth. A user who loses unsaved work when an internet connection goes down –whether they are editing video, writing an article, or creating captions– is certain to be unhappy if there are no backup mechanisms or ways to avoid permanent data loss. In situations where connectivity may be an issue, as mobile devices can be prone to do, it is ideal to fail gracefully and allow the user to do one or more of the following: A) continue using the application while offline, B) export their data manually, and/or C) resume work when reconnected, all with minimal trouble⁴. PCF's goal in

² 8 Limitations When Designing for Mobile – Jamie Appleseed, March 21, 2012
<http://baymard.com/blog/mobile-design-limitations>

³ Best Practices for Responsive UX – Kerri Hui, December 7, 2015
<https://www.linkedin.com/pulse/best-practices-responsive-ux-kerrie-hui>

⁴ Design your website for a graceful fail – Jenn Webb, April 26, 2012
<http://radar.oreilly.com/2012/04/resilient-user-experience-mike-brittain-velocity-2012.html>

T204.6 is to address barriers to productive collaboration, which are especially important when mobile connectivity may be an issue.

4 Implementation

This section highlights the approaches used in developing UE enhancements to meet the aforementioned challenges.

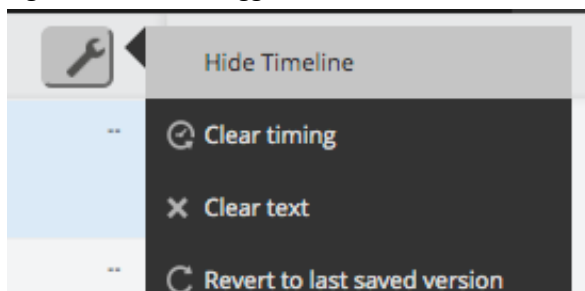
4.1 Mobile Usability

Mobile devices present unique form-factor challenges, such as lack of physical keyboard, smaller screens, and different input characteristics. To address these differences, and create a mobile focused experience for the UE caption editor, the PCF team built the features described in the following sections.

4.1.1 Mobile Affordances

Mobile interfaces lack the ability to accommodate mouse hovering, a mechanism commonly used to show hidden menus. Although some menus in the UE caption editor do reveal themselves when the mouse cursor hovers on them, the team ensured that these menus would also accommodate touchscreen usage, and would toggle open when clicked (see Fig 3.). This provides an ideal user experience no matter which type of platform, mobile or desktop, a user selects. Additionally, the UE caption editor already supports commonly used and/or open video formats that work well in the mobile browser, including: mp4, ogg theora, and webm.

Figure 3: Hover vs Toggle on Mobile

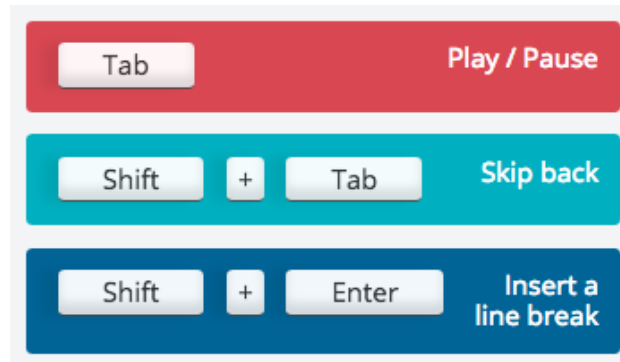


4.1.2 Primary Hot-key Buttons

Due to the limits of the mobile form factor, keyboard combination hotkeys are not available. To overcome this limit, the UE caption editor includes large brightly colored buttons that have a clearly labeled function (see Fig. 4). They serve the dual function of showing the keyboard combination shortcut and acting as buttons that execute the hotkey function. The functionality is for the most commonly accessed controls for editing captions, including playing/pausing the video, rewinding the video (aka "Skip back"), and inserting a line break

in a caption. This allows use both via the native mobile interface, and via any Bluetooth connected keyboard.

Figure 4: UE Hotkey Buttons



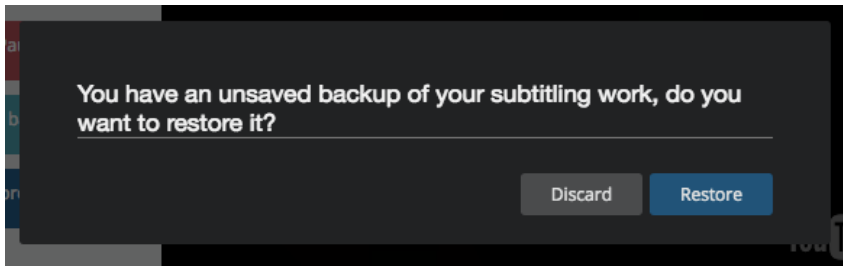
4.2 Intermittent Bandwidth

Another key aspect for a mobile focused interface is ensuring a great experience when there is low bandwidth, no bandwidth, or intermittent bandwidth. For a web-based caption-authoring interface, such as the UE caption editor, it is crucial to ensure that permanent data-loss does not occur when users are transitioning between networks or find themselves suddenly without internet connectivity. The following features ensure a better and more interactive mobile experience where bandwidth may not be as steady as a laptop or desktop computer connected by Wi-Fi or Ethernet.

4.2.1 Auto-save and Restore

A straightforward mechanism to protect against data loss is to auto-save regularly and, in the event of a crash or sudden interruption, to offer to restore work upon restarting the application. Auto-save is now implemented in the UE caption editor; captions are auto-saved to the user's browser local cache once every minute (both for mobile and for desktop). In case of a sudden interruption –say a device crashes or runs out of battery– upon re-opening the UE caption editor, the user will be presented with the option to restore the most recent unsaved backup of their work (see fig. 5).

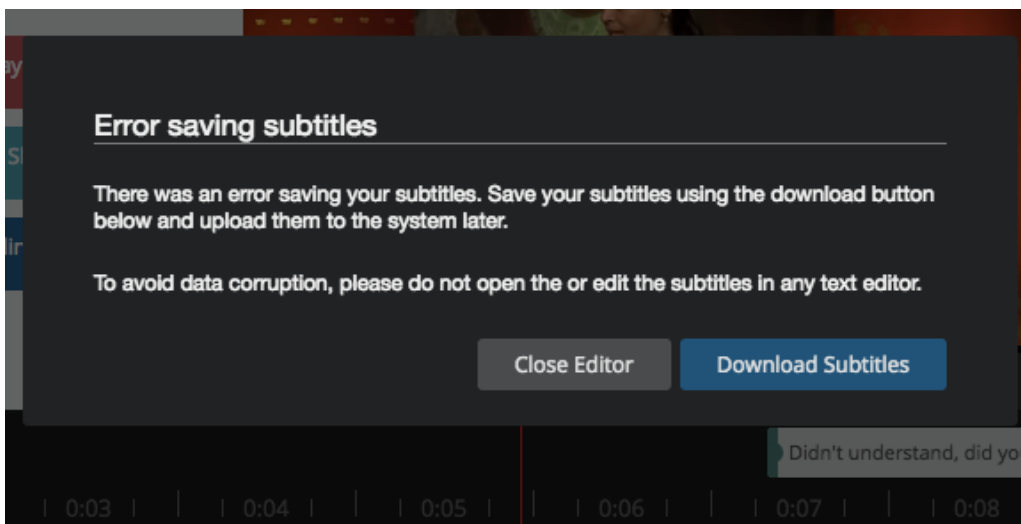
Figure 5: The “Unsaved backup” Dialog



4.2.2 Download Subtitles on Disconnection

In addition to browsers crashing or batteries unexpectedly dying, there are times when a user’s connection to the internet may be disconnected – this is especially common on mobile devices, which are often switching between networks and/or operating in areas with poor reception. While auto-save alone works well enough for offline applications, an application such as UE – a collaborative and multi-user caption and subtitling platform– depends on a continuous internet connection to properly function. To avoid partial or complete loss of work, if a user attempts to save their work when an internet connection is not available, the UE caption editor will display an “Error saving subtitles” dialog that offers a “Download Subtitles” option (see fig. 6). This is especially helpful on a mobile device, where the downloaded subtitles can be saved locally in case the internet connection is lost.

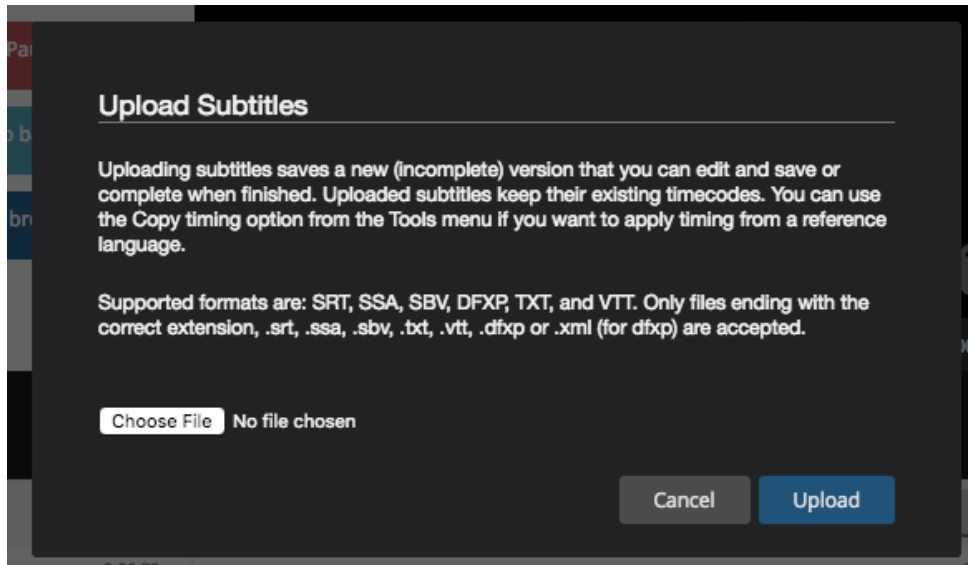
Figure 6: The “Error saving subtitles” Dialog



4.2.3 Upload Subtitles Inside Editor

If a user is caught in a situation where they need to download and save captions offline, the simplest path to recovery is uploading the saved captions. To minimize steps to recovery in this situation, the simplest path for mobile users is to upload subtitles from directly within the UE caption editor, which is now possible (see fig. 7).

Figure 7: The “Upload Subtitles” Dialog



5 Conclusion

Based on the detailed analysis performed on the previous version of UE, the required features have been identified and implemented, so as to improve experience of users on mobile devices; such as tablets or phones. Whether a user is on a desktop with Ethernet broadband or on a mobile device with a more intermittent connection, the UE can now host broader and more inclusive communities of volunteers. Ultimately, the T204.6 feature improvements will benefit any person or organization that wishes to create more cost-effective captions or subtitles with the help of a community. This approach goes to the heart of UE's, PCF's, and Prosperity4All/GPII's vision for a more collaborative world that fosters broader participation and engagement.

Source code for the Unisubs Engine: <https://github.com/pculture/unisubs/>.

The Unisubs Engine Editor can be seen working in a production environment at: <https://amara.org/en/videos/create/> (note: videos/captions added to the Amara.org become publicly viewable/editable).

Annex I: Glossary

Abbreviation	Full form
AAL	Ambient Assisted Living
ACS	AsteRICS Configuration Suite
AoD	Assistance on Demand
API	Application Program Interface
AsteRICS	Assistive Technology Rapid Integration & Construction Set
AT	Assistive Technology
C4A	Cloud4All
D	Deliverable
DoW	Description of Work
DSpace	DeveloperSpace
GUI	Graphical User Interface
GPII	Global Public Inclusive Infrastructure
ICT	Information and Communications Technology
IDE	Integrated Development Environment
ISO	International Organization for Standardization
IT	Information Technology
KPI	Key Performance Indicator
P4A	Prosperity4all
PCF	Participatory Culture Foundation
R&D	Research and Development
RtD	Read the Docs
REST	Representational State Transfer
SP	Sub-Project
UE	Unisubs Engine
UI	User Interface
UX	User eXperience

Abbreviation	Full form
VM	Virtual Machine
WP	Work Package