WP8 – Use Cases: SAM in Action

D8.4.1: Use Case Validation and Feedback (First Version)

Deliverable Lead: UoR

Contributing Partners: UoR, NTUA, BDS, DW, TIE, TPVI

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Final

This deliverable focuses on use case validation reporting. In this first iteration of the deliverable, a report on the evaluation of the use cases carried out as part of first observational tests with users. The results of these observational tests are provided to the project consortium as formative feedback in order to address technical issues and improve and further align development activities with user expectations.
Document Status

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Executive Summary

This deliverable documents the first round of use case reviews and user evaluations carried out in Work Package 8, Task 8.4 as part of the SAM project. As the first of two deliverables, this deliverable focuses on the identification of formative feedback for the project partners that can be used to improve the project outcomes before the final version of the SAM Platform is evaluated both by potential business users and potential end users of the platform.

In order to achieve this, this deliverable reports on expert inspections of the developed prototypes and on results from initial user tests and trials. In all cases, the focus of reporting is placed on the identification of actionable improvements to the overall SAM Platform as opposed to a summative evaluation in order to determine the user acceptance of the platform – the latter will be carried out and document in the second D8.4 deliverable D8.4.2. Since a number of improvements have been directly communicated and have been acted upon by the project consortium prior to the completion of this deliverable, we also report and document significant changes that have been implemented based on feedback generated during the creation of this deliverable.
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1 Introduction

SAM – Dynamic Social and Media Content Syndication for 2\textsuperscript{nd} Screen – is a project funded by the Seventh Framework Programme of the European Commission under Grant Agreement No. 611312. It provides a content delivery platform for syndicated data to be consumed in a contextualised social way through 2\textsuperscript{nd} Screen devices.

1.1 SAM Project Overview

The current generation of Internet-connected devices has changed the way users interact with media. Previously, users were restricted to being passive and unidirectional consumers; now, they are proactive and interactive media users. They can comment on and rate a television show or film and search for related information regarding cast and crew, facts and trivia or even filming locations. They do this with both friends and wider social communities through the so-called “2\textsuperscript{nd} Screen”.

Another related phenomenon is “Content Syndication”, which is a field of marketing where digital content is created once and delivered to consumers through various different marketing channels (devices, markets and stakeholders) simultaneously, enabling efficient content control, delivery and feedback.

However, the 2\textsuperscript{nd} Screen phenomenon has grown in a disorderly manner. Tools supplied by the media provider companies (e.g. as mobile or tablet apps) limit the potential outreach and, as a result, users are not enjoying relevant contextual syndicated information. European enterprises wishing to provide services have limited methods of receiving feedback, restricting the business intelligence that can be extracted and applied in order to profit from and enrich this growing market.

SAM is reshaping the current disorganised 2\textsuperscript{nd} Screen ecosystem by developing an advanced social media delivery platform based on 2\textsuperscript{nd} Screen and Content Syndication within a social media context. This is achieved by providing open and standardised means of characterising, discovering and syndicating media assets interactively. Users will be able to consume and prosume digital assets from different syndicated sources and synchronised devices (e.g. connected televisions), creating more fulfilling experiences around the original media assets.

The SAM vision that is now becoming reality, sees the former, out-dated system of users searching for the information they desire replaced with a new approach where information reaches users on their 2\textsuperscript{nd} Screen using content syndication. This is enriched through the creation of dynamic social communities related to the user and digital asset context (e.g. profiles, preferences and devices connected). These are continuously evolving social spaces where people share interests, socialise and build virtual communities. SAM will enable syndication of comments, ratings, facts, recommendations and new information that will enrich and energise the virtual community as well as enhance personalised knowledge and satisfaction.

1.2 Deliverable Purpose, Scope and Context

This deliverable documents the first round of use case reviews and user evaluations carried out in Work Package 8, Task 8.4 as part of the SAM project. The deliverable is the first of two deliverables focuses on the identification of formative feedback for the project partners. It has been used to improve the project outcomes before the final version of the
SAM Platform is evaluated both by potential business users and potential end users of the platform.

In order to achieve this, this deliverable reports on expert inspections of the developed prototypes and on results from initial user tests and trials. In all cases, the focus of reporting is placed on the identification of actionable improvements to the overall SAM Platform as opposed to a summative evaluation in order to determine the user acceptance of the platform – the latter will be carried out and document in the second D8.4 deliverable D8.4.2. Since a number of improvements have been directly communicated and have been acted upon by the project consortium prior to the completion of this deliverable, we also report and document significant changes that have been implemented based on feedback generated during the creation of this deliverable.

1.3 Document Status and Target Audience

The main target audience for the work documented in this deliverable is the SAM consortium, which has used the information gathered for this deliverable in order to improve the SAM Platform prototype under development in the project. The deliverable will also be of interest for developers who are working on 2nd Screen applications with a format similar to that of SAM – for them, lessons learned during the development of the SAM Platform are documented together with suggestions for changes to issues that have been identified as issues to be addressed or avoided.

1.4 Abbreviations and Glossary

A definition of common terms and roles related to the realisation of SAM as well as a list of abbreviations is available in the SAM Glossary.

Further information can be found at http://wiki.socialisingaroundmedia.com/index.php/Glossary.

1.5 Document Structure

The deliverable is structured as follows:

- **Section 1 (Introduction):** Provides an overview over the deliverable and the related pilot implementations
- **Section 2 (Formative Evaluation Approach):** Summarises the methods applied for the formative evaluation carried out for this deliverable
- **Section 3 (Production Scenario):** Reports on the findings and recommendations made for the SAM production Scenario
- **Section 4 (Prosumption Scenario):** Reports on the findings and recommendations made for the SAM prosumption Scenario
- **Section 5 (Conclusion):** Summarises the status of the implementation at the end of the respective prototype iteration

1.6 External Annexes and Supporting Documents

The following deliverables are directly related to this deliverable:

- D8.1 “Use Case Definition and KPI Definition”
- D8.2.1 “Use Case I: Content Syndication and Media Enrichment (First Version)”
- D8.3.1 “Use Case II: Social Consumption (First Version)”
2 Formative Evaluation Approach

The evaluation approach that is applied in the SAM project is undertaken in two iterations: first, a formative evaluation phase, in which the focus of evaluations is placed on improving the SAM Platform prototype available at the time; second, a summative evaluation of the final prototype version of the SAM Platform at the end of the project. This deliverable reports on the formative evaluation methods applied, and this section characterises why and for which specific purposes the formative evaluations were undertaken.

2.1 Overview

As an end-to-end environment, the SAM Platform is used by several user communities:

• Professional users who intend to provide data to the ecosystem, create and publish 2nd Screen experiences and then evaluate the usage of and interaction with 2nd Screen experiences
• End users who participate in 2nd Screen experiences created for them through the SAM Platform

Both for professional users and for end users, numerous specialist user functions for professional users and different usage behaviours and environments for end users can be relevant. The formative evaluation for SAM focuses on core activities for both user groups as they have been described in the production and prosumption scenarios in SAM deliverable D8.4.1.

The evaluations for both target user groups focus on specific core user groups.

For professional users, the focus is placed on users who ingest and manage content in the SAM Platform and content editors that use the available content in order to create 2nd Screen experiences. Content editors are assumed to be tasked with the creation and post-production review of 2nd Screen experiences for short-form content as it has been provided to the project by project partner Deutsche Welle. The evaluation omits other stakeholders that would be involved in a real-world deployment such as senior editors, programme responsibles, marketing staff and system administrators.

For end users, the target audience for user evaluations has been defined as teenagers at the age of 14-18 who are attending school. This allows the project to evaluate the user acceptance of the SAM Platform with users who can be considered “native” smart phone users given their age group. Other demographics and user populations cannot be considered within the scope of the project due to time and budgetary constraints.

2.2 Goals

The goals for the formative evaluation of the SAM Platform are defined given the goal to leverage evaluation work and outcomes in order to improve the system under development, as it is common for formative evaluations. The formative evaluation of the SAM Platform has specific goals for each of the two main scenarios for the SAM Platform.

For the Production Scenario, the core of goals of the formative evaluation are the following:

• Identify to which extent the functionalities provided by the prototype system under evaluation match with the expectations defined by the user partners for the respective functionalities; this includes verifying whether the functionalities technically fulfil the
requirements formulated for the respective functionalities and to which extent they address soft expectations that may not have been explicitly formulated as part of requirements; identify functionality issues that can be improved to better meet expectations for the final prototype, and propose improvements.

- Identify to which extent the functionalities provided by the prototype system support the envisioned workflow for users working in the Production Scenario chain of activities; propose measures that could improve workflow integration of the prototype system for the final version.
- Identify to which extent the system performance in terms of non-functional properties meets the expectations of the user partners for a prototype system; identify non-functional system properties that require improvement for the final system prototype.
- Identify usability issues which should be changed in order to improve ease of use and usability of SAM Platform functionalities.

For the Prosumption Scenario, the core goals of the formative evaluation are the following:

- Identify usability issues which should be addressed in order to improve ease of use and usability of SAM Platform functionalities for end users; this goal has a higher priority for the Prosumption Scenario than for the Production Scenario, because neglecting usability issues can strongly bias end user perceptions of prototype systems, causing end users to respond to usability issues rather than to the items of concern.
- Identify means for improving the presentation of 2nd Screen content in order to improve the user experience of the presentation of 2nd Screen content on the SAM Dashboard.
- Identify functionality changes that can improve the user experience of interacting with content on the 2nd Screen.
- Identify functionality changes that can improve the user experience of interacting with social functionalities on the 2nd Screen.

Overall, it should be clear that the goal of the formative evaluation is not to determine the performance of the system in order to evaluate it in order to measure project outcomes, but to determine how best to spend the effort available in the final development phases of the project in order to create the most useful final prototype solution for the defined key user groups envisioned for SAM.

2.3 Expected Outcomes

Overall, the expected outcome of a formative evaluation process has been to identify improvements to a system. The expected outcome of the formative evaluation activities in SAM is the following:

- Review the latest available system prototype at the time of evaluation and identify areas and specific issues for improvement, primarily through expert-driven inspection and review activities.
- Identify and propose specific changes that are expected to address the identified areas and issues identified in the previous step.
- Review proposed changes and select those changes that can feasibly be implemented during the final prototyping phases of the project. If possible, rank the proposed changes in descending order of expected overall positive impact of a change for the envisioned target user base.
- Document proposed changes that exceed the scope of the remaining development time in the project. Identify proposed changes that in particular can improve the exploitation potential of the SAM Platform after conclusion of the project, and
communicate them to the team working on exploitation activities for incorporation into post-project development planning.

The outcomes of the formative evaluation process are documented in this deliverable.
3 Production Scenario

The SAM Production Scenario, described in SAM deliverable D8.1, Section 2.2, is concerned with the process of ingesting, acquiring and using content in order to create a 2nd Screen experience that accompanies a video being played back on a SAM-enabled television or similar video playback device.

3.1 Approach

The SAM Production Scenario formative evaluation was carried out by means of expert walkthroughs and usability inspections. Domain and usability experts reviewed the available prototype version and provided feedback to the technical project partners involved in the development of the system components involved in the Production Scenario. Review activities were carried out by partners BDS, DW and UoR. These types of approaches rely on the expertise and domain knowledge of the personnel involved in order to identify system issues that require improvements.

3.2 Procedure

One expert from each of the three partners involved carried out a review of the Production Scenario components, in line with their relevant capabilities:

- Partner BDS reviewed the data ingestion, data representation and marketplace functionalities of the SAM Platform.
- Partner DW reviewed the workflow involved in creating a 2nd Screen experience with assets from the SAM Marketplace.
- Partner UoR reviewed the overall user interface provided via the Dashboard for the Production Scenario.

The findings from these inspections have been collected and are represented in this deliverable; they are oriented on the tasks and system components under consideration (as opposed to by reviewer), as this is more operationally appropriate for providing formative feedback.

3.3 Outcomes

This subsection documents the general outcomes of the inspections that have been carried out. The outcomes are divided into general remarks and ones that are specific to particular tasks and task areas. General outcomes document key issues that have been identified for the entire user interface developed; the following sections address specific items for individual functionalities offered through the system.

3.3.1 General

A general issue that was identified by reviewers was the labelling of user interface elements in the prototype under evaluation. A significant proportion of the labelling used in the user interface was considered difficult to understand, especially when it was derived from technical implementation specifics instead of from user requirements.

Another general issue that was identified by reviewers was an overall lack of guidance in terms of steps in a production workflow which should be followed by users of the system. Taken together with issues in naming and labelling elements in the user interface, it was
considered to be not easy enough to navigate through the individual process steps that are necessary in order to complete the creation of a 2nd Screen experience. In order to alleviate these issues, it was suggested to provide more explicit guidance on the functionalities provided by the specific components as shown in the user interface either directly in the user interface or in the form of suitable documentation.

Overall, the assessment was that no significant features are missing in the system, but that the presentation of the features and the integration of the features into a workflow structure need to be improved in order to improve the overall system usability and reduce training effort.

The presentation of the SAM Marketplace user interface was generally considered to be visually consistent and clear for the components of the SAM Platform that are part of the SAM Marketplace. The presentation of error messages was found to be lacking and no sufficiently helpful to system users – issues resulting from user interactions are not distinguished from technical system errors and presented in the same manner without providing practical assistance to system users. Additionally, some layout issues with data entry forms have been identified.

General non-functional system properties, most notably system response times, were not brought up by any of the reviewers and can thus be considered to be adequate for the tasks carried out using the system.

### 3.3.2 Asset Repositing and Publishing

The system provides an “assets” view in which users can see the content assets available to them. In the assets view, the status of the assets shown is not clear to the user, and it is not clear to the user whether all relevant assets are shown. This issue pertains to situations where several users of an organisation use the SAM Platform and may individually acquire content assets as part of their work. The issues to be addressed are that the user is not able to understand why a particular item is being shown and how it arrived in the list of available assets for the user.

When browsing assets that are not yet owned or licensed by the user, users are not presented with sufficient information in order to make selections at the level of buying decisions. Reviewers noted that they were not able to preview the asset they were interested in and that more information on the asset being viewed should be made available through the user interface.

The navigation and presentation elements related to available assets for a user to use in 2nd Screen experiences and the users available for purchase or acquisition through the SAM Marketplace are not clear to users.

At the time of review, the SAM prototype provides a demonstration user interface for defining bulk imports that does not support the complete importation process including defining and/or uploading metadata mapping files. While the user interface generally represents the necessary input data, including for scheduled imports, it is not clear how the system would present reports of errors or irregularities to the user, which is the most important item to present to users interested in this functionality.
The definition of mapping files is undertaken using a separate user interface from the general SAM marketplace interface. Ideally, even non-frequent activities such as the definition of mapping files should be integrated into the single business user interface. The asset creation functionality is currently not part of the Asset Importer or Browser, which makes it difficult to find for users intending to create individual assets in the platform.

### 3.3.3 Content Characterisation and Linking

The general impression of the content characterisation and linking functionalities is that while the linking functionality is quite far developed, the content browsing functionality is not yet sufficiently useful to assist editors meaningfully in selecting content from an available repository when creating a 2nd Screen experience. This would in particular be true in situations where an editor interacts with third-party assets she is not familiar with. The system as provided supports a limited range of search and sorting functionalities. The Asset Browser should be modified so that it provides more information on assets found using the search function. A full preview function for the assets found through the asset browser is missing, so that editors cannot review the actual content as it would be seen by an end user prior to selecting and potentially having purchased an asset of interest.

The content characterisation itself should be improved and include more suitable metadata descriptions of the content that is described (please note that the system under evaluation...
was still using version 2 of the SAM ontology for content characterisation, not the updated version 3).

### 3.3.4 2\(^{nd}\) Screen Experience Creation

The 2\(^{nd}\) Screen experience creation process involves interacting with different sections of the Marketplace workspace, and it is not clear to users which need to be carried out in which order. The creation of a 2\(^{nd}\) Screen experience itself is carried out in the Linker. In the Linker, the labelling of linking functionalities is not always clear, because the wording used in the user interface appears to describe system functionalities and elements from a developer perspective and not from an end user perspective. The Linker navigation is not clear to the user and different options offered to the user in relation to assets listed in the Linker start screen interface are not clear to the user. Once an option has been selected, it is not possible for the user to return to the main screen without leaving the Linker section of the workspace. This is in particular the case in the Asset Composition view of the Linker.

While generally response times of the platform are within the range of expectations, load times for asset suggestions exceeded ten second waiting times in some instances, which is too long in the view of the reviewers.

If a specific widget style is required for the system, this needs to be first created in the Widgets section of the workspace. It is not obvious to the evaluators how a widget style can be applied to a 2\(^{nd}\) Screen experience upon creation. During testing, widget styles that were selected in order to adapt the overall presentation to a preferred visual representation were not applied to the widgets and they were not used in the final product delivered to end users.

If consumer protection rules are to be applied to a 2\(^{nd}\) Screen experience, they first need to be created using the Brand and Consumer section of the workspace user interface. Again, it is not clear to the evaluators how or whether rules can be assigned to specific 2\(^{nd}\) Screen experiences or whether they apply globally – and if they apply globally, what the definition of “globally” is in this instance.

### 3.3.5 Data Analytics

The Data Analytics component of the system integrates an existing Business Intelligence frontend (eazyBI) into the overall SAM Platform. The integration of a third-party frontend results in a somewhat different visual representation and navigation experience to the rest of the system. This may cause users some minor problems, but overall the navigation and functionalities for creating reports in eazyBI are easy to use.

The labelling of some data sources available through the Business Intelligence user interface is unclear to the reviewers. Similarly, labelling of the Social Mining analytics should be improved in order to clarify which input should be provided, and a wizard-style guide for adding requests should be considered.

The system allows users to create custom reports given the data that has been connected to the eazyBI frontend. Here, the labelling of data sources is also not sufficiently informative and should be improved. Users are not provided with sufficient information and descriptions of the data sources available, which makes it difficult to create reports without some level of trial-and-error.
3.4 Recommendations

Based on the observations made and summarised in the previous section, a number of general and task-specific recommendations have been formulated. These recommendations are described below. Recommendations are summarised for some instances where they were worked on in a workshop-style environment (notably for element labelling and graphical and user interface element layout).

Recommendations are grouped by the topic area that they cover and presented primarily in a table format that provides both the issue to be addressed and the suggested way for addressing it side-by-side.

3.4.1 General

The general points to be addressed focus on cross-cutting issues and as well as ancillary and non-functional system behaviours.

<table>
<thead>
<tr>
<th>Observation</th>
<th>Recommendation</th>
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<tr>
<td>GP-1: Text on login screen is not descriptive (nor a good description of the project)</td>
<td>Revise text on SAM Marketplace login page</td>
</tr>
<tr>
<td>GP-2: Mandatory elements in user registration form are not highlighted.</td>
<td>They should be highlighted or it should be explicitly states that all fields are required.</td>
</tr>
<tr>
<td>GP-3: The registration form page does not explain what will happen after registration.</td>
<td>As users are automatically logged in after registration, this should be stated on the page with the registration form to avoid confusion.</td>
</tr>
<tr>
<td>GP-4: The “Pass” field in the user registration form is unclear</td>
<td>This field should be labelled differently to clarify.</td>
</tr>
<tr>
<td>GP-5: The search function across the workspace does not return sensible results</td>
<td>The search function should be modified or disabled if that cannot be done.</td>
</tr>
<tr>
<td>GP-6: Income and site orders elements look like “marketing fluff” for the template used</td>
<td>These elements should be removed unless they have marketing or demonstration value.</td>
</tr>
<tr>
<td>GP-7: Element on right side of home page does not have a table header to identify what it is</td>
<td>Add header and/or remove element (as functionality relative to other elements is unclear)</td>
</tr>
<tr>
<td>GP-8: Some elements on the home page are not labelled consistently relative to other elements</td>
<td>Unify labelling across workspace components.</td>
</tr>
<tr>
<td>GP-9: Naming of the marketplace itself is somewhat misleading.</td>
<td>Consider renaming the marketplace, e.g. to SAM Workspace.</td>
</tr>
<tr>
<td>GP-10: Breadcrumb navigation is not consistently clickable.</td>
<td>Breadcrumb navigation should be made consistently clickable.</td>
</tr>
<tr>
<td>GP-11: Clicking on the SAM logo opens the SAM project website instead of the Marketplace home page.</td>
<td>Clicking on the logo should get users to the Marketplace home page.</td>
</tr>
<tr>
<td>GP-12: The system does not currently appear to flag when orders are received (e.g. through a notification).</td>
<td>Add means to be notified about order requests received.</td>
</tr>
<tr>
<td>GP-13: The default view for “My SAM” should not be profile information but order information.</td>
<td>The default view for “My SAM” should be changed to order information or a newly created status overview. Providing address information is not very useful for the user.</td>
</tr>
<tr>
<td>GP-14: Clicking on the user name directs the user to some built-in system features. This does not add any useful functionalities.</td>
<td>The “My SAM” functionalities could be moved to the “user name” menu, or the “user name” menu should be disabled.</td>
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Figure 2: General Recommendations
The majority of general recommendations made in this table is not critical for the system at prototype status but would help in improving the user experience by streamlining the overall user experience, in particular via the removal of unnecessary clutter and the reduction in navigation steps needed in the system.

The recommendations will become more important on the way to the commercialisation of the SAM platform after completion of the research project.

3.4.2 Asset Repositing and Publishing

Asset repositing and publishing is covered by different parts of the SAM Marketplace, referenced here by the navigation menu entries they are provided under:

- Asset Browser: Management of the asset repository
- Asset Import: Addition of new assets
- Brand and Consumer: Restriction of third party access to assets
- My SAM: Management of asset order requests

Only the relevant elements of the user interfaces accessible under these navigation menu entries are considered in these recommendations. Recommendations in other sections of this deliverable will also refer to the same navigation menu entries, but to different elements available under those menu entries.

<table>
<thead>
<tr>
<th>Observation</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>RP-1: In the Asset Browser, asset load times when loading asset information are long and no indication that a loading procedure is going on is given.</td>
<td>Add a visual indicator for loading status to the page and/or reduce asset information load times.</td>
</tr>
<tr>
<td>RP-2: In the Asset Browser, it is not clear why a tab is displayed at the top of the overlay asset information element (as there is only one tab to show).</td>
<td>Remove tab in this instance as it is not useful.</td>
</tr>
<tr>
<td>RP-3: Asset description labels are not self-explanatory.</td>
<td>Either change labels if possible or add tooltip explanations for labels.</td>
</tr>
<tr>
<td>RP-4: The asset importing user interface appears to be a proof-of-concept system. The user interface appears serviceable, but there is no clear way to add mappings to the system that could be used for importing.</td>
<td>Add mapping upload functionality.</td>
</tr>
<tr>
<td>RP-5: The external mapping editor is not part of the unified marketplace environment and has a different look and feel to the marketplace.</td>
<td>The consortium should consider providing mapping editor functionalities through the web user interface in the future. Whether this needs to be a core feature depends on the future target audience and the frequency with which the expected target audience will need to modify mappings in the mapping editor.</td>
</tr>
<tr>
<td>RP-6: The import schedule information export is not labelled with any information.</td>
<td>The import schedule information export should be labelled appropriately.</td>
</tr>
<tr>
<td>RP-7: The import form wording is poor.</td>
<td>The import form wording needs to be improved to make the expected input field content easier to understand.</td>
</tr>
<tr>
<td>RP-8: It is unclear how Black and Whitelist entries are to be created by a user.</td>
<td>Provide user with an option to create white/blacklist entries.</td>
</tr>
<tr>
<td>RP-9: Rules created with the rules editor are not saved as expected.</td>
<td>Correct behaviour of rule editing user interface or provide user guidance for how to use the rule editor.</td>
</tr>
</tbody>
</table>
3.4.3 Content Characterisation and Linking

Content Characterisation and Linking deals with the creation and editing of assets in the system. As such, there is some overlap between this section and the ones preceding and succeeding it. This section focuses on the Creation and Linking system, which is managed through the Linker menu entry in the SAM Marketplace.

In this section, we focus on the following activities:

- Manual definition of assets
- Linking of assets via the Linker interface

As previously, only the relevant user interface elements of the components involved were reviewed. Duplicate observations and recommendations already proposed elsewhere have been omitted from the table below for brevity and to avoid confusion for implementers.

<table>
<thead>
<tr>
<th>Observation</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>CL-1: When creating an asset, switching between the different asset description tabs does not work when the main tab has not been completed.</td>
<td>Correct behaviour of tabs also when the main tab has not yet been completed unless this is not possible due to minimum data requirements in the General tab. If that is the case, then highlight the mandatory elements in the form.</td>
</tr>
<tr>
<td>CL-2: In the asset creation field, preset values are not automatically removed when a user starts entering text.</td>
<td>Change this behaviour so that default values such as “NOT SET” are removed as soon as a user starts entering text into the field.</td>
</tr>
<tr>
<td>CL-3: In the asset creation field, the list of available genres is not functional.</td>
<td>Correct the behaviour of the list of available genres.</td>
</tr>
<tr>
<td>CL-4: In the asset creation field, asset ID and asset owner need to be filled in, which is not highlighted appropriately.</td>
<td>Clearly indicate mandatory elements in the editor.</td>
</tr>
<tr>
<td>CL-5: In the asset creation window, owner and creator are not set and cannot be set. Pushing the open in new tab button does not open a new tab. This is the case for user accounts for which no company has been set.</td>
<td>Fix user interface elements to enable desired functionality.</td>
</tr>
<tr>
<td>CL-6: In the asset creation window, selecting the discard option does not close the asset creation overlay window.</td>
<td>Correct this to the expected behaviour.</td>
</tr>
<tr>
<td>CL-7: All tabs in the asset creation window appear to show the same elements</td>
<td>Review whether the asset creation windows function as intended.</td>
</tr>
<tr>
<td>CL-8: In the asset creation window, assets cannot be deleted.</td>
<td>Remove the functionality if it is not intended or ensure that it works as intended.</td>
</tr>
</tbody>
</table>

3.4.4 2nd Screen Experience Creation

The 2nd Screen experience creation is concerned with the creation of the integrated experience and focuses on the arrangement of assets on an experience timeline. The Linker section of the user interface provides the relevant functionalities for the multi-screen timeline and the preview for assets.
EC-1: It is unclear why some assets are “available for linking” while other assets are not; this should be clear through the user interface.

EC-2: It is unclear which assets are suitable "1st Screen" assets and which ones are not. Items for which no timeline can be established should not provide a timeline view, unless there is a mode to view images as 1st Screen assets and define a runtime for a 2nd Screen experience created for it for example.

EC-3: No default search filter text input element is provided in the asset browser.

EC-4: Full 2nd screen preview for editors is not available.

EC-5: Redundant navigation elements between main navigation menu and “within-component” navigation menus.

Figure 5: 2nd Screen Experience Creation Recommendations

3.4.5 Data Analytics

Data analytics were not accessible at the time of review. A summative evaluation will be provided in the final deliverable D8.4.2.

<table>
<thead>
<tr>
<th>Observation</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>DA-1: The labelling of data sources and default plots provided is poor.</td>
<td>Labelling of default plots created for demonstrations and of default plots should be improved.</td>
</tr>
</tbody>
</table>
| DA-2: Data sources available through eazyBI are not described in sufficient detail. | The user interface should be improved if possible so that some information on the data available in a data sources is added (e.g. a short description paragraph).
This could be done via tool tips or in a description table of data sources. If the latter is chosen, it should be made “clickable”. |
| DA-3: Social media data sources are presented as a separate category from other data sources. It is not clear why that is the case. | Data sources should be unified, which would also resolve the need to use tabs to switch between the two major “views” that are currently used in eazyBI. |
| DA-4: Labelling of Social Mining functionalities and input fields and selectors is poor. | Labelling should be improved and more descriptive of the exact format required (e.g. using examples) |
| DA-5: Social Mining queries are difficult to create without additional guidance. | Create a wizard interface for creating Social Mining queries. |

Figure 6: Data Analytics Recommendations

3.5 Summary

As discussed at the start of this section, it is not the expectation of the reviewers that all of the highlighted issues will be addressed during the course of the project. The aim has been twofold: a) provide actionable recommendations for improvement for issues that can be fixed prior to the final system evaluation, and b) to provide suggestions for improvement
for further development after the conclusion of the project. Specifically concerning the latter part, further recommendations will be provided in the final deliverable D8.4.2, taking into account the outcomes from the Production Scenario user evaluation.
4 Prosumption Scenario

This section discusses a first round of user evaluations carried out as a pilot test for the actual user trial to be carried out at the end of the project and in order to gather formative feedback from the user group expected to be participating in the summative user trials at the end of the project.

4.1 Approach

The formative Prosumption Scenario evaluation has served several purposes at the same time:

- Test the technical environment at the two sites used for user evaluations;
- Test the multi-user capabilities of the SAM Platform in the real-world environment for the user evaluations;
- Pilot the study design, material and questionnaires with participants that are representatives of the group of participants that will participate in the final summative evaluation of the project;
- Gather formative feedback from participants that are representatives of the group of participants that will participate in the final summative evaluation of the project.

In order to address all of these purposes, a first user trial with the trial setup intended for use in the final summative user evaluation was carried out.

4.2 Procedure

This section summarises the evaluation approach for the evaluation of the Prosumption Scenario. Two approaches were carried out as part of the formative evaluation: expert inspections and walkthroughs and the first iteration of a trials with end user participants.

4.2.1 Expert Inspections and Walkthroughs

During the preparatory phase for the first user evaluation sessions, several expert inspections and walkthroughs were undertaken in order to improve the user experience prior to the first user trial involving users. The focus of the inspection was on practical improvements to the end user experience in preparation for the formative user evaluation, which then provided further formative feedback for changes and improvements.

The focus of the expert inspections and walkthroughs undertaken prior to the first user evaluation was to improve the instant usability of the proposed system and to address obvious usability issues before the formative user evaluation, as these issues would otherwise likely obfuscate issues less obvious to the project participants.

4.2.2 First End User Trial Iteration

A first iteration of the SAM end user trials was carried out as a pilot study and in order to gather formative feedback from users that are representative of the user population for the final end user evaluation of the SAM Platform.
The pilot examined both the technical infrastructure needed for the user trials and the evaluation procedure itself, including the order of activities, timing, questionnaire items, language and 2nd Screen experiences used as part of the trials.

The full evaluation setup for end user trials is described in detail in deliverable D8.4.2. The general overview of the evaluation procedure was as follows.

User trials were carried out with Spanish secondary-level school children on the premises of two Spanish schools located near Valencia. Prior to the actual date of the user trial, potential participants were asked to complete a pre-trial questionnaire for demographic information and information on their smart device and media usage preferences and behaviour (see D8.1 for the design and questionnaire items of this questionnaire). This questionnaire remained unchanged relative to the first version issued to gather initial information on the target audience, but was delivered as an online questionnaire as opposed to a paper-based questionnaire following a request by the supporting teachers from the partner schools.

Trials were carried out on two successive days at two school venues. As was expected for this technical trial, some technical issues were identified that related both to the locally available infrastructure and to the SAM Platform performance for the chosen evaluation scenario. Both are reported as part of the outcomes reported below.

Implications for the experimental design are analogously captured and reported as separate subsections in the remainder of this section.

4.3 Outcomes

As noted earlier, this deliverable reports summary findings and the second deliverable in this task, deliverable D8.4.2, contains the full evaluation results for the trials carried out during the project, including comparisons between iterations. This section reports on the overall outcomes of the evaluation in summary form, and the following section denotes recommendations on issues to address for the final evaluation deployment of the SAM platform.

4.3.1 General

Overall, the trial execution was hampered by some interruptions during the first trial day but was much improved on the second trial day (caused by issues described under the technical outcomes below). Due to this, some functionalities of the SAM Platform were not presented as intended, in particular during the first trial session.

Overall, participants in the first trial were quite interested in the SAM Platform in general as it was presented to them during the trial sessions. 73.2% of participants agreed or strongly agreed with the statement that “using the SAM app improves viewing the video on the TV” and 77.3% of participants agree or strongly agreed with the statement that they find the SAM app “useful for additional information about topics in a video”, and 77.3% of participants agreed or strongly agreed with the statement that they find the SAM app “useful for chatting and exchanging information with other students”. 71.4% of participants agreed or strongly agreed with the statement that they “like using the SAM app”; 60% of participants agreed or strongly agreed with the statement that they “would use the SAM app with other videos at school”, while 65.2% of participants agreed or strongly agreed with the statement that they “would use the SAM app with my TV at home”.

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While the concept of the SAM app that was presented appeared to appeal to participants, numerous specific issues were identified as in need of further development; these are described in the following subsections.

The user evaluations are oriented alongside the key activities defined for the Prosumption Scenario. Detailed descriptions of the scenarios on which the user evaluations are based can be found in the SAM deliverable D8.1, Section 2. Please note that the Advanced User-System Interaction use case was evaluated in this session only for voice interaction functionalities, because other functionalities described in the use case require small group interactions that could not be produced in the evaluation setting available for the first evaluation (e.g. television control).

### 4.3.2 Augmented Consumption

The first scenario investigated is “Augmented Consumption”, which is primarily concerned with the augmentation of 1st Screen content via 2nd Screen content.
Generally, participants provided positive feedback concerning the content provided and the general presentation of it on the devices they used. The participants considered the content provided to be useful and a useful improvement while watching a video on the TV. Participants noted issues with the presentation of the 2nd Screen content on the device as the video time progresses. Some participants noted that too many items were presented to them on the 2nd Screen device, while others noted they would have liked more content options on the 2nd Screen device (for the same 1st Screen video and 2nd Screen content). This implies that the desired amount of information provided to end users differs between users more strongly than anticipated.

Participants furthermore expressed that the information presented appeared and disappeared very quickly as the 1st Screen video was shown. They also noted that it was difficult or they were unable to access the 2nd Screen items presented for a video after the video had finished playing back (the functionality was available through the user interface but apparently not clear to participants). The first item relates both to the programming of 2nd Screen items for the trial and to missing user interface support for interacting with interesting 2nd Screen content; the second item relates to a visibility and accessibility issue of the user interface elements that were already available in the user interface.

4.3.3 Social Interaction

In the Social Interaction scenario, participants used a 2nd Screen app with augmented content and with social media integration through a pre-set social media channel; no dynamic communities were suggested to them in this scenario. As the video progressed, pre-recorded social media content created by the project team was presented at appropriate points in time in order to stimulate social interactions during the trials. Participants responded generally positively to having a social media chat option available to them; the communication options seemed clear and easy to use to them. Participants noted that the social media widget used for communication was not very responsive and that messages from themselves and other participants appeared with a significant delay. A review of the submitted community messages showed that numerous participants initially sent messages several times, because they had the impression the message had not been sent successfully (because it was displayed with a delay after having been sent).

4.3.4 Advanced User-System Interaction

For Advanced User-System Interaction, participants were asked to use voice control features to carry out a short list of tasks suggested to them. Participants generally were able to use the voice control, but noted that they were not clear when voice control was “active”, “listening” or “processing”. Participants were able to execute functionalities proposed to them, but the voice recognition functionality was inhibited by a limited number of compatible Android devices and by noisy classroom environments.

4.3.5 Dynamic Content Provision

In the Dynamic Content Provision scenario, participants used a 2nd Screen app with augmented content and dynamic community integration. The system reacted to user input and a set dynamic community invitation was made to evaluation participants part-way through the video. This was done in order to ensure that all participants were provided with at least one dynamic community invitation regardless of their interactions with the system.
Participants generally responded positively to the dynamic community option and understood why and how dynamic community invitations were presented to them, including both the pre-programmed community and communities created for them on the fly.

In terms of the visual display of invitations, participants did not find them easy to spot; in the first evaluation session, a bug prevented some users from joining dynamic communities (this was resolved before the second evaluation session the following day).

Some additional technical and experimental design issues were identified during the Dynamic Content Provision session. These are discussed in the respective subsections below.

### 4.3.6 Technical Outcomes

The first user evaluation of the SAM project was intended both as a means to gather formative feedback and additional feedback related to elements of the evaluation itself. Technical issues and items for improvement for the final summative user evaluation are part of this feedback. In this context, technical outcomes relate to non-functional issues encountered during the trial that need to be addressed in order to allow participants to evaluate the system free of technical hindrances.

The SAM infrastructure requires sufficiently high-bandwidth Internet connectivity in order to service its users. In the case of the SAM user evaluations this requires particular attention, because the system setup differs from a living room setting in that a much larger number of participants will use the system over a single Internet connection. In the case of the first SAM school evaluation session, the networking infrastructure present at the school caused issues in terms of the number of devices that could be supported by the network DNS server, so that participants had to be asked to share devices instead of using a personal device each. This was not an issue in the second school, where the Internet infrastructure was sufficient for carrying out user trials.

Participants were asked to use personal or school-provided devices to test the SAM app provided to them. The SAM consortium provided a native Android app to Android phone users and a not as well integrated browser-based solution to Apple device users. Both user interfaces provided the end users with equivalent functionalities (some functionalities such as location-based services were not used in the trials in order to make sure that all participants evaluate the same feature set). Furthermore, participants predominantly used phone devices and not tablet devices, so that the respective screen size was not optimal for displaying the SAM widget environment.

### 4.3.7 Experimental Design Outcomes

In addition to technical issues, the formative evaluation was also used in order to identify issues with the experimental design used for the user evaluation. A number of issues for improvement were identified.

Participants were given 5 to 10 minutes for exploration and to complete the user questionnaires for each of the use cases under evaluation. This combined time proved to be too short in particular for completing the evaluation questionnaires.

All material was provided to evaluation users in English language. Some of the participants noted that they would have preferred to receive instructions in Spanish language as well. A few participants remarked that they would have preferred Spanish language 2nd Screen
and SAM community interactions (participants were asked to use English language only in SAM communities).

Evaluation of voice control features was found to be problematic in the setting that was available in the first evaluation and will remain in the second evaluation: participants had problems interacting with the voice control system in the evaluation environment, which was noisier than e.g. a home environment would be and where participants would concurrently try to use voice control features in close proximity to each other, likely interfering with speech recognition quality and making it difficult to hear audio feedback through phone speakers set to low volume.

4.4 Recommendations

Based on the observations made and feedback received during the user trials, a number of recommendations have been formulated and structured analogously to the subsections of the previous section. As for the Prosumption Scenario use cases, observations and recommendations are provided in a table structure.

4.4.1 General

General recommendations concern the overall 2nd Screen app user experience and captures recommendations that cannot be assigned to a specific use case evaluation. In this case the general recommendations focus on items that cannot be assigned to specific use cases; the majority of “basic” recommendations are provided with the Augmented Consumption recommendations in Section 4.4.2.

<table>
<thead>
<tr>
<th>Observation</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>GC-1: Some participants found the app installation instructions difficult to follow.</td>
<td>Rewrite app installation instructions and look into simplifying the installation if possible. Cross-check instructions with a Spanish native speaker and consider translating installation instructions.</td>
</tr>
<tr>
<td>GC-2: Participants were sometimes logged out of the system without any explanation of what to do.</td>
<td>Provide clear messages for when users are logged out of the system and redirect them to the login screen if necessary. Minimise the number of logout events to such situations were logging users out is strictly necessary.</td>
</tr>
<tr>
<td>GC-3: Multi-column content display is not suitable for small form factor devices.</td>
<td>As the system will largely be evaluated using smartphone devices of different sizes, the system should be changed so that content is displayed in a single-column layout either only for those types of devices or for all device types. It is recommended to consider coupling this with timeline-style presentation and to change it for the overall system in order to clarify presentation and user interactions.</td>
</tr>
<tr>
<td>GC-4: Some of the limited screen real estate of mobile phones was taken up by large user interface bar elements.</td>
<td>Remove or hide user interface elements as far as possible in order to provide the maximum possible space for content on small displays.</td>
</tr>
<tr>
<td>GC-5: Participants were asked to use their devices in “landscape” view, which reduced the number assets visible to them.</td>
<td>Optimise the presentation of content assets so that portrait view can be used by end users with small form factors devices.</td>
</tr>
<tr>
<td>GC-6: The project visual identity is not used consistently. Using it would be beneficial for project dissemination and would give the app a clear visual identity.</td>
<td>Appropriately apply the SAM visual identity on the 1st and 2nd Screen.</td>
</tr>
</tbody>
</table>
4.4.2 Augmented Consumption

Augmented Consumption recommendations concern the basic user-system interaction and the presentation of content for the purpose of augmenting consumption of the 2nd Screen content presented to end users. Figure 9 below illustrates the overall look of the SAM UI evaluated for reference.

This set of recommendations in principle also applies to all later use cases, as they all extend on the concept presented in Augmented Consumption.

- **GC-7**: The time display in the 2nd Screen user interface uses seconds and milliseconds. Change the time indication to use minutes and seconds.
- **GC-8**: Some of the SAM app icons are too close together on smaller phone displays. Improve spacing between SAM app navigation bar icons either globally or relative to display pixel density.

**Figure 9: Example for Display of Augmented Consumption Widgets**
### AC-1: In some instances, the graphical display of images cuts of images or does not display them appropriately relative to the widget size.
Review and improve layouting and presentation of images as part of article displays in widgets.

### AC-2: The ordering in which content assets are displayed is “newest at the bottom”. The related “automatically scroll to bottom” functionality of the user interface is not functioning consistently, so that content may be missed.
Revert the content order so that new content always appears at the top. When users have scrolled to a widget, do not automatically scroll back to the top when a new asset is provided. Instead, provide a pop-up notification overlay indicating that new content is available.

### AC-3: Content disappeared at the end of video runtime and was accessible only through an optional display at the bottom of the application window.
All content should remain available to users either throughout the entire experience using a timeline metaphor or after the video playback has been completed (also using a timeline metaphor). After completion of video playback, all 2nd Screen content should be displayed in reverse order of appearance.

### AC-4: On some occasions, participants were not able to view more content when selecting the “view more” option to extend an article widget.
Correct “view more” label so that it behaves as expected.

### AC-5: The 1st Screen user interface still contains widgets with what appears to be debugging information.
Clean up 1st Screen display; the display should be equivalent to broadcast TV as far as possible (minimal 1st Screen user interface).

### AC-6: The system offers no support for users to review selected assets after completion of viewing.
Provide users with a “video-local” or global bookmarking feature.

### AC-7: “Show more” widgets do not consistently display the “Show less” button when opened.
Ensure that “Show less” buttons appear consistently when required. Change button label to a different description if possible.

### AC-8: Some asset types are displayed as inline web pages, which is not consistent with the look & feel of the remaining app.
Unify or change the way in which external content that cannot be adapted to SAM design is displayed.

### AC-9: Some participants found that too much information was presented to them during video playback.
Provide users with an option to filter widgets based on manually assigned settings and/or based on learned preferences.

<table>
<thead>
<tr>
<th>Observation</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>SI-1: Since social media widgets are of the same “priority” as any other widget, they get moved around and disappear as they scroll out of view.</td>
<td>Social media widgets should be readily available to the end user. They can be made “sticky” or should be made instantly accessible via navigation means (e.g. drop-down menu or tab navigation).</td>
</tr>
<tr>
<td>SI-2: Social media widgets display little content as the widgets are not very large.</td>
<td>The maximum possible space should be assigned to social media widgets (preferably full screen).</td>
</tr>
<tr>
<td>SI-3: Content posted by users is only displayed with a delay, causing users to repost several times until they understand that a delay is present.</td>
<td>Immediately display posted content locally.</td>
</tr>
<tr>
<td>SI-4: Participants noted a significant delay between someone posting a message and them seeing it, which was specifically visible given the evaluation environment, where all participants where in the</td>
<td>The time interval between posting a message and it being displayed to users should be reduced as far as possible.</td>
</tr>
</tbody>
</table>
same physical location.

<table>
<thead>
<tr>
<th>Observation</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>SI-5: Participants could not find the social widget after the completion of video playback in some instances, as it was moved to the same “old content” display as 2nd Screen augmented content.</td>
<td>Social media widgets should be readily available to the end user also after the end of video playback.</td>
</tr>
<tr>
<td>SI-6: The option to switch between real-world time and within-video timeline time was not clear to participants.</td>
<td>Clarify the meaning of the option to switch between real-world and timeline time; use a simple explanation such as “spoiler view” or “co-watching view” to explain functionality to end users.</td>
</tr>
<tr>
<td>SI-7: Device keyboard almost completely obstructs view of widgets when in use (landscape orientation).</td>
<td>Ensure that system functionalities and all interaction elements for Social Media interaction remain useable when the device keyboard is shown.</td>
</tr>
</tbody>
</table>

Figure 11: Social Interaction Recommendations

### 4.4.4 Advanced User-System Interaction

Recommendations for Advanced User-System Interaction focus on the improvement of the visual system user interface. It is our judgment that the evaluation of the voice control features in terms of speech recognition, triggering of activities and overall user interaction via voice could not be sufficiently evaluated in the setting chosen for the first user evaluation, so that not much formative feedback could be gathered from the evaluation.

<table>
<thead>
<tr>
<th>Observation</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>AI-1: Users did not understand how to operate the voice control “listen” functionality. Their intention was to hold the button down to speak as in other voice applications.</td>
<td>Either mimic other voice applications by using “push-to-talk” button behaviour or give a visual indication for when the system is “listening” to the end user.</td>
</tr>
<tr>
<td>AI-2: Users were unclear whether the system did not understand them or was processing their input.</td>
<td>Provide a visual indicator for processing and indicate when processing has been completed.</td>
</tr>
<tr>
<td>AI-3: Users were not always able to comprehend the voice output at the first time.</td>
<td>Provide users with the option to repeat a response (via voice or UI element), or alternatively also present the response as written text on the display.</td>
</tr>
</tbody>
</table>

Figure 12: Advanced User-System Interaction Recommendations

### 4.4.5 Dynamic Content Provision

Recommendations for Dynamic Content Provision concern the user-system interaction with Dynamic Communities and features specific to this group of functionalities.

<table>
<thead>
<tr>
<th>Observation</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC-1: Dynamic community invitations are not presented in an intuitive manner and take up too much screen real estate.</td>
<td>Invitations should be visually redesigned and graphically presented in a more intuitive manner. The space used for displaying invitations should be reduced.</td>
</tr>
<tr>
<td>DC-2: Invitations that newly arrived are not highlighted suitably to the end user.</td>
<td>New invitations should be displayed prominently for short period of time, e.g. as an overlay message.</td>
</tr>
<tr>
<td>DC-3: Users were not clearly informed about which dynamic community their messages were sent to as part of the interface.</td>
<td>Clearly indicate in the user interface which dynamic community a message is being sent to.</td>
</tr>
</tbody>
</table>
Figure 13: Dynamic Content Provision Recommendations

4.4.6 Technical Recommendations

Technical recommendations concern recommendations for issues with the technical infrastructure for the user evaluation that should be improved for the final summative user evaluation.

<table>
<thead>
<tr>
<th>Observation</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC-4: Names of dynamic communities were cut off in the selection drop-down menu used for dynamic community interactions.</td>
<td>Ensure that dynamic community labels are clearly readable in the user interface.</td>
</tr>
<tr>
<td>DC-5: Users did not understand where and how they could edit their dynamic community membership.</td>
<td>Revise the visual display for activating the community management overlay; revise the visual presentation of dynamic communities a user is a member of and introduce graphical indicators for users for how to leave a community.</td>
</tr>
<tr>
<td>DC-6: Participants did not always understand why they were invited to a dynamic community.</td>
<td>Provide explanations based on which information an invitation was issued to the end user using a simple explanation.</td>
</tr>
</tbody>
</table>

Figure 14: Technical Recommendations

4.4.7 Experimental Design Recommendations

Recommendations concerning the experimental design of the user evaluation focus on changes that should be made in order to improve the quality of the final summative user evaluation in terms of ensuring as far as possible that the evaluation captures relevant information in a suitable manner and using suitable methods – within the scope of the evaluation approach defined in the SAM Description of Work.

<table>
<thead>
<tr>
<th>Observation</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>ER-1: The evaluation environment is not well-suited for evaluating voice interactions, and the partner involved in voice interaction would like to evaluate more and more complex scenarios which take additional time to evaluate.</td>
<td>Organise a separate evaluation session for voice control which involves one-on-one interaction with the device in a suitable environment with less noise interference.</td>
</tr>
<tr>
<td>ER-2: Some participants noted that they would prefer to have Spanish language introductions.</td>
<td>Let a Spanish-speaking project member handle introductions and verbal explanations of procedures and functionalities for the final user evaluation.</td>
</tr>
<tr>
<td>ER-3: Time scheduled for user interaction and completion of questionnaires was not sufficient in all instances.</td>
<td>Increase the time given to participants for the two scenarios involving social media interaction.</td>
</tr>
<tr>
<td>ER-4: Participants noted some minor issues with the comprehension of words in the explanatory texts provided.</td>
<td>Revise text for introducing system functionalities. Evaluation questions should not be changed; instead, teachers should be asked to review relevant phrases with their students prior to the evaluation sessions.</td>
</tr>
</tbody>
</table>

Figure 15: Experimental Design Recommendations
5 Conclusion

This deliverable reports on the first user evaluation with the aim to provide formative evaluation feedback to the project partners. The project partners can then apply this feedback and specifically the recommendations provided in order to improve the system prototype in preparation for the final summative user evaluation.

Reviewing the outcomes of the formative user evaluation, it can be seen that the system overall provides the functionalities expected of it. The opinion of the evaluating staff is that for the final user evaluations, the system prototype should be improved in terms of accessibility of features and their structuring. This should ensure that system evaluation results are not dominated by responses that are concerned about presentation issues with the prototype system, but that can focus on the evaluation of the functionalities provided to the respective target users.

For the Production Scenario components of the environment, the main recommendations are to improve the language used to for labels and functionalities in the system, to introduce preview functions for assets and experiences to facilitate selection and editing of 2nd Screen experiences and to clarify the workflow path that editors should take through the system.

The Prosumption Scenario components of the environment should primarily be improved in terms of addressing presentation issues and in terms of improving the visual presentation of assets displayed. Social functionalities should be separated from other assets and it should be ensured that they can always be accessed by end users.

It is not expected that all recommendations proposed in this deliverable will be taken up by the project for the final review. The staff carrying out the evaluations remains in close direct contact with the project developers to assist in prioritisation of issues.
6 References