Second Functional Requirements Description

Project acronym:	**SENSE4US**
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Contributors:	**Steve Taylor**
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History

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0.1	27/10/2015	Initial draft	Steve Taylor
1.0	03/02/2016	Final Version	Steve Taylor

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List of abbreviations

Abbreviation	Description
DoW	Description of Work
WP	Work package

Executive summary

This deliverable comprises D3.3, the Second Functional Requirements Description. Feedback and end-user requirements arising from the evaluation of three prototypes of the SENSE4US system that were reported in D2.4, the Initial Evaluation and Report of Updated Requirements. D2.4 is the major input to this deliverable. The feedback and end-user requirements were analysed and functional requirements were derived from them, and this deliverable contains the methodology and results of this analysis.

This analysis is different from that presented in D3.1, because the input to it is actual feedback from usage of three prototypes, whereas the input to D3.1 was analysis of survey and initial interviews with end users. The feedback from end users has taken a number of forms, and all can determine the next set of functional requirements. Some examples of the feedback types included were:

- Which tools were useful (and why)
- Which tools were not useful (and why)
- Limitations, sometimes with suggestions for fixing them
- Bugs
- Suggestions for improvement

Where possible, functional requirements have been derived that describe what the system needs to do to address the feedback. In some cases, feedback from the end users represents a general theme, and in this case, we have discussed approaches that the SENSE4US developer proposes to take to address the feedback.

1 Introduction

This deliverable is D3.3, the Second Functional Requirements Description. Feedback and end-user requirements arising from the evaluation of three prototypes of the SENSE4US system were reported in D2.4, the Initial Evaluation and Report of Updated Requirements. D2.4 is the major input to this deliverable. The feedback and end-user requirements were analysed and functional requirements were derived from them, and this deliverable contains the methodology and results of this analysis.

This analysis is different from that presented in D3.1, because the input to it is actual feedback from usage of three prototypes, whereas the input to D3.1 was analysis of survey and initial interviews with end users.

2 Methodology

The methodology to determine functional requirements is described below. It was mainly concerned with evaluating and categorising the feedback elicited from D2.4, and subsequently determining functional requirements – namely, what the SENSE4US system needs to do to address the feedback. The mechanism for evaluation of the feedback was to use a tabular form (an Excel sheet, which is included in the Appendix), and to determine the most frequently requested items, which were then prioritised.

1. D2.4 was reviewed and feedback from end users was highlighted. This could be of the following forms:
    - General comment (likes / dislikes)
    - Problem / bug
    - Why something is useful
    - Why something is not useful
    - Suggestion for improvement
    - Limitation
    - Suggestion to fix limitation
2. The feedback was analysed in an Excel sheet. This has the following structure:
    - Feedback ID - so we get a unique identifier
    - Component - which SENSE4US component the feedback refers to
    - Source - EC (Gov2u) / UK (Hansard Society) / DE (GESIS)
    - Prototype Version - 1, 2 or 3
    - Feedback Text (Quoted from D2.4) - paste of feedback text
    - Summary of Requirement - summary of any functional requirement arising from the feedback
    - Feedback Summary - summary of the feedback
    - Developer Comment - any comment made by the developers (e.g. how to address the requirement, suspected causes of problems, etc).
3. A set of categories was determined for the feedback, and a tick has been placed in every one that applies to an item of feedback. The purpose of this was to add these up to determine the most commonly mentioned requirements or feedback. The categories were determined on the fly as the feedback was examined, based on observations of the feedback. Where more than one occurrence of a category or feature was likely, it was added to the list. The feedback categories are:
    - Usability
    - Bug
    - General Suggestion
    - Limitation
    - Suggestion to fix Limitation
    - General comment
    - Possible new tool

4. As with the feedback categories, a set of categories for the feedback's subject areas, components or new features was also determined. These were also created on the fly based on examination of the feedback from the end users. These are as follows:
    - Twitter
    - Help
    - Control Flow
    - UI
    - Filtering
    - Transparency
    - Result Presentation Clarity
    - Location of social media users
    - Delete redundant results
    - Performance
    - Analyses over Time
    - Social Media User Analysis
    - Phrases rather than keywords
    - Multiple Language Support
    - URI Lookup
    - Support new data sources
5. Each item of feedback has been evaluated and allocated into whatever categories of feedback and subject areas are applicable (sometimes more than one category applies). Totals for each category have been derived to give an indication of the most important feedback category and subject areas.
6. Where possible, functional requirements (what the system must do) were derived from the main items of feedback. In other cases, the feedback represented a more general principle rather than a specific requirement, so where a functional requirement was not apparent, an approach to addressing the feedback was suggested.

The results of this methodology are described in the next section.

3 Results

In total, there were 68 items of feedback derived from D2.4. General comments were provided by the end users on the tools and the SENSE4US toolkit in general. Where possible, functional requirements have been derived, but in some cases the feedback represents a general principle to be taken into account rather than resulting in a specific functional requirement. This section first discusses the explicit functional requirements, and then goes on to discuss the more general feedback themes.

3.1 Key Functional Requirements

Some key functional requirements have been derived from the user feedback, and these are listed as follows (highlighted in ***bold italic***).

1. ***Being able to delete empty or redundant results*** is required to avoid clutter in the user interface.
2. Some tools were not easy to understand, both from the point of view of what they do and how to use them, so therefore ***explanation of what each tool does and how to use it*** is required.
3. The Linked Open Data Search is seen as useful in helping to find (possibly unknown) related information, but needs a wider set of data sources. Therefore, for the Linked Open Data search, a key requirement is to ***support searching of different data sources***.
4. ***Filtering results*** is required - enabling the user to cut out certain results to see the important results. The criteria for filtering is many and varied, and includes:
    - A social media posting user's home location (e.g. where they come from) - this is seen as important so we only get postings from users relevant to a country or local area.
    - Results outside a certain time frame.
    - Social media postings by certain user types (e.g. influential users, trolls, commercial)
5. Time-based analyses are seen as useful, so the user can determine changes over time, or correlated to a specific event for example.
    - An important useful feature of the previous social media analysis tool was the change of sentiment over time. The previous social media analysis tool was in prototype v1 and v2, and is now superseded by the SentiCircles in v3, so a logical conclusion to this is to ***support using the SentiCircles over time***.
6. Being able to ***categorise social media users*** is required, in particular:
    - being able to identify and filter out commercial postings (so they may be filtered out), and
    - determine who influential users are.
7. Supporting real-time collection of tweets (i.e. ***monitoring the Twitter stream***) is seen as useful.

3.2 Feedback Themes on Tools and SENSE4US

For each of the feedback items below, a conclusion is drawn. Where it is a specific functional requirement, it is highlighted in ***bold italic*** text.

1. The topic analysis tool's result were considered too difficult to understand because a theme is represented by a small "bag of words" (unordered keywords extracted from the text), and in many cases it is difficult to see what the theme is from the bag of words.
    - The key functional requirement is to ***replace the "bags of words" with more meaningful text to better describe the themes in the source documents***.

2. The new SentiCircles from KMI and its UI from IT Innovation is almost universally seen as very useful and easy to understand. It is popular and is seen as a significant improvement over the previous social media analysis tool.
    - The conclusion is to replace the previous social media analysis with the new SentiCircles tool, but also given the main benefit of the previous social media analysis tool, it must be possible to ***support using the SentiCircles to show the change in sentiment over time***. (This is the same functional requirement as derived above.)
3. The theme overlap tool was deemed useful, but only if the results were more clearly presented. It was not clear how the social media postings were compared to documents - e.g. what were the units of each? Was a post compared to a paragraph for example?
    - The theme overlap tool will be investigated further to determine whether it is truly useful, and if so, the units being compared must be clearer.
4. Single keywords in analysis results were not seen to be as useful as snippets of text from the input data, e.g. small quotations representing a theme or sentiment. Even if they were just two words long, they would convey more information than single words alone because of the additional context.
    - The key requirement here is to ***show representative snippets of a source text to indicate important aspects of a document***.
5. Usability of the SENSE4US system was a key item of feedback. Important elements within this general area were as follows.
    - The overall control flow was unclear - users did not know what to do once they had executed a tool.
        - This can be addressed in a number of ways, and these will be investigated:
            - Provide guidance on the toolkit's UI itself on how the toolkit can be used.
            - Provide demonstration cases that show the tools working together.
    - Status updates on running tools were not provided and are important, because without them the users do not know what is happening. Sometimes tools run for a long time and the user does not know if the tool has crashed or not.
        - At the moment the UI only updates when the tool returns its output. The key requirement here is to ***change the status behaviour so that a tool's status is indicated as "running" upon launch of the tool and can be periodically updated.***
6. Transparency of results is seen as important, so users can understand how the results are computed, and what the input data is.

- This can be addressed in a number of ways and these will be investigated:
  - Provide explanations of the algorithms behind the tools' front ends. This will be attempted (e.g. the tools are based on academic papers that contain the algorithms), but this can be difficult to translate into laypersons' text.
  - Show inner workings of tools. This may be possible in some situations, and a case in point is the policy model builder of WP6 that aims at providing a toolkit to help a user build a model of the key factors connected to their policy, so the model is transparent to the user. This principle is carried through to the simulation phase, where all intermediate values can be viewed as well as the resulting output.
  - Provenance information on data both input and derived from the toolkit's results is recorded and made available to the user.

7. Some useful suggestions were made:
   - Run sentiment analysis on documents as well as social media postings
     - This will be investigated. Because the sentiment analysis code uses text as its input, it is expected to be possible, but investigation is required to determine if the results are useful or whether adjustment needs be made to accommodate longer-form text.
   - Provide a tool that can find stakeholders interested in a particular subject area
     - This will be investigated, as it is a good potential application of the Linked Open Data search – open data sources can be searched and the results filtered to show interested stakeholders.

4 Conclusions

This deliverable has determined the functional requirements derived from the evaluation of the prototypes in the period PM13-24. The feedback from end users has taken a number of forms, and all can determine the next set of functional requirements. Some examples of the feedback types included were:

- Which tools were useful (and why)
- Which tools were not useful (and why)
- Limitations, sometimes with suggestions for fixing them
- Bugs
- Suggestions for improvement

Where possible, functional requirements have been derived that describe what the system needs to do to address the feedback. In some cases, feedback from the end users represents a general theme, and in this case, we have discussed approaches about how the SENSE4US developer propose to address the feedback.

Appendix – Source Data

The accompanying Excel sheet gives an indication of how the overall functional requirements were derived from the feedback given by the end users in response to the demonstrations and engagement events conducted by WP2.

								Feedback Type								Subject Area																	
User Feedback Number	**Component**	**Source**	**Prototype Version**	**Feedback Text (Quoted from D2.4)**	**Summary of Requirement**	**Feedback Summary**	**Developer Comment**	Usability	Bug	General Suggestion	Limitation	Suggestion to fix Limitation	General comment	Possible new tool		Twitter	Help	Control Flow	UI	Filtering	Transparency	Result Presentation Clarity	Location	Delete	Performance	Analyses over Time	Social Media User Analysis	Phrases rather than keywords	Language	URI Lookup	Support new data sources
								14	**6**	**16**	**12**	**10**	**8**	**5**	**0**	**9**	**4**	**1**	**11**	**8**	**6**	**12**	**4**	**2**	**1**	**3**	**6**	**3**	**2**	**1**	**3**
UF-002	Document Processing	UK	2	An important problem was that the tool couldn't extract and search text from tables embedded within documents.	Support extraction of text from tables in documents						1	1																				
UF-003	Document Processing	UK	2	The search function also rejected short or single sentences, excluded bullet points and other short pieces of text – it was suggested that the user should be able to set the criteria for automatic rejection/acceptance of paragraphs of text. An 'accept all' button was also desired as on many occasions the user found himself wanting to accept many of the paragraphs that had been automatically rejected – it would have been	Select / deselect all sentences for accept / reject			1			1	1																				

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User Feedback Number	**Component**	**Source**	**Prototype Version**	**Feedback Text (Quoted from D2.4)**	**Summary of Requirement**	**Feedback Summary**	**Developer Comment**	Usability	Bug	General Suggestion	Limitation	Suggestion to fix Limitation	General comment	Possible new tool		Twitter	Help	Control Flow	UI	Filtering	Transparency	Result Presentation Clarity	Location	Delete	Performance	Analyses over Time	Social Media User Analysis	Phrases rather than keywords	Language	URI Lookup	Support new data sources				
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				easier to accept them all than reject the few he didn't want.																																
UF-004	General	DE	1	Overall, however, a significant concern was the need to modify the tool such that its functionality would work with the German language.	German language support							1																1								
UF-005	General	DE	1	To aid usability, some end users suggested the tool be available in two settings: 'light' (normal) and 'advanced' mode.	Light and advanced mode			1		1				1					1																	

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UF-006	General	DE	1	A delete function was therefore noted as a necessity.	Delete function for all elements			1				1												1							
UF-007	General	DE	1	to share the results with relevant people would augment the utility of this functionality	Support sharing of results					1																					
UF-008	General	DE	1	They also noted the importance of what was described as the 'delta' – namely what changes had taken place in respect of their searches for particular projects since they last logged in.	What has happened since last time					1																					
UF-009	General	DE	1	And all participants mentioned the value inherent in being able to monitor key words over a period of time.	Monitor Twitter Stream							1		1		1																

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UF-001	General	UK	2	Users need “information feedback” and “error messages” to explain problems and highlight actions that need to be taken as they move through the various search stages.	Progress and error messages are needed throughout			1	1			1	1									1													
UF-010	General	EU	3	From the users perspective it was not sufficiently clear how they should run a Twitter search, and that these then needed to be added to the SentiCircles for further analysis.	How to run a Twitter Search & Unclear overall control flow												1	1																
UF-011	General	EU	3	The less tech-savvy end-users pointed out that some explanatory information is needed in each window of the tool to set out the functionalities of each component and what the user can expect to do / to happen.	Explain what each tool does & How to use it												1		1															

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UF-012	General	EU	3	After getting acquainted with the main components of Toolbox v3, two of the three end users asked whether general media could also be tracked.	Track general media					1				1																						
UF-013	LOD	UK	2	Linked open data search of relevant themes and keywords could identify individuals and organisations interested in ULEVs.	Find stakeholders					1				1																						

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UF-014	LOD Search	UK	2	Having failed initially to get this tool to work, it became clear that users need to give the website permission to run scripts or the search fields do not populate with text from the Linked open database. In Chrome it wasn't obvious what the problem was. In Opera the browser stated that the page was trying to do something and needed permission. This issue needs to be highlighted for the user so that they can take whatever action is necessary depending on the browser they are using.	Unclear about "unsafe scripts"						1						1																		
UF-015	LOD Search	UK	2	It was recommended that users be able to drag and drop parts of the visual results map so that they could view the results more flexibly.	Move and hide LOD search result elements			1		1								1																

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UF-016	LOD Search	UK	2	The initial results were always shown from the minimum distance of 0 connections – it was suggested that it would be better to default to the middle distance or provide hits for all distances	LOD connectivity should not falsely return 0 results		LOD connectivity by default uses a path length of 1, and this may return no paths. If no paths is returned, it could be a good idea to try a path length of 2.		1			1																							
UF-018	LOD Search	UK	2	An option to go to the webpage each link relates to was also recommended as a helpful improvement.	LOD results should link through to real data or web pages			1		1																									

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UF-019	LOD Search	UK	2	Overall, search results were found to be 'very hit and miss' – it took a lot of trial and error to get a return with any links			LOD searches need to produce better results - suspect this is related to the need for URIs - these need to be explicitly provided and makes the LOD search produce no results if they are inaccurate. Need look up from keyword to candidate URIs.			1	1																			1								
UF-020	LOD Search	DE	3	The interviewees' saw lots of potential in the concept as it is not currently possible to run this kind of search query on the type of sources currently being used.		General comment that the LOD Search has useful potential							1																								

								Feedback Type								Subject Area																				
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UF-021	LOD Search	DE	3	However, to be effective and utilised, the tool will need to be developed to work across a wider range of Open Data sources. Wikipedia, the current database on which it draws, is regarded as a useful first step overview source but not somewhere policy-makers go for detailed information and analysis.	Need to support a wide variety of open data sources - not just DB/Wikipedia						1																					1					
UF-022	LOD Search	DE	3	Another issue is that the component needs to accept German key words as search input and provide German documents as output.	German language support																								1							

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UF-023	LOD Search	EU	3	Due to difficulties posed by the amount of time it was taking to search and load results, the Linked open data search function was not presented in real time with live data – a pre-developed example for presentational purposes was instead.	Need to investigate performance of LOD search results			1	1																1								
UF-023a	LOD Search	EU	3	LOD search was entirely new to the end users but they were particularly interested in the concept of 'bridged' data sets.		General comment about connections between data sets being useful																											

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UF-024	LOD Search	EU	3	the LOD map for the topic “electric cars”, interlinked data such as “right of asylum” or “Hinduism in Punjab”, neither of which have readily evident links to electric cars leading the users question the functionality of the component. The search capacity thus requires considerable refinement and the filtering options need improvement.	Filter out irrelevant results in LOD Search				1											1													
UF-025	LOD Search	EU	3	It was also suggested that a broader range of source datasets be utilised. All end users became critical and sceptical once they learned that the tool’s search function draws on Wikipedia	Need to support a wide variety of open data sources - not just DB/Wikipedia					1																					1

								Feedback Type								Subject Area																				
User Feedback Number	Component	Source	Prototype Version	Feedback Text (Quoted from D2.4)	Summary of Requirement	Feedback Summary	Developer Comment	Usability	Bug	General Suggestion	Limitation	Suggestion to fix Limitation	General comment	Possible new tool		Twitter	Help	Control Flow	UI	Filtering	Transparency	Result Presentation Clarity	Location	Delete	Performance	Analyses over Time	Social Media User Analysis	Phrases rather than keywords	Language	URI Lookup	Support new data sources
								14	6	16	12	10	8	5	0	9	4	1	11	8	6	12	4	2	1	3	6	3	2	1	3
UF-026	LOD Search	EU	3	It was suggested that the LOD component be connected to other trusted source databases – e.g. of EU institutions – to draw on different data.	Need to support a wide variety of open data sources - not just DB/Wikipedia					1																								1
UF-017	LOD Surrounding	UK	2	It was also noted that having the type of link (eg. Wiki PageExternalLink) listed in full for each result could rapidly result in a lot of clutter	Remove clutter from LOD surrounding results			1	1										1	1		1											
UF-027	LOD Surrounding	EU	3	LOD surrounding was welcomed more positively by end users, not least because it provides them with the opportunity to filter information as they see fit.		General comment about LOD surrounding being useful							1																				

								Feedback Type								Subject Area																			
User Feedback Number	Component	Source	Prototype Version	Feedback Text (Quoted from D2.4)	Summary of Requirement	Feedback Summary	Developer Comment	Usability	Bug	General Suggestion	Limitation	Suggestion to fix Limitation	General comment	Possible new tool		Twitter	Help	Control Flow	UI	Filtering	Transparency	Result Presentation Clarity	Location	Delete	Performance	Analyses over Time	Social Media User Analysis	Phrases rather than keywords	Language	URI Lookup	Support new data sources		
								14	6	16	12	10	8	5	0	9	4	1	11	8	6	12	4	2	1	3	6	3	2	1	3		
UF-028	LOD Surrounding	EU	3	The “map of surrounding” concepts was welcome, and the “table of concepts” (see Figure 14)was deemed useful as a way to enable users to browse through categories and to learn about the data sets in a more structured way.		General comment about LOD surrounding being useful							1																					
UF-029	Sentiment Analysis	DE	1	If the user clicked on a sub collection of negative or positive tweets an ordered list of tweets emerged and they wanted to know the ranking order of them. Here, the wording on the user interface had to match the visual outputs so that positive came first on both or vice versa (but not positive/negative on one but negative/positive on the other).			Original sentiment analysis UI needs to be made consistent with itself. However, this is superceded by the new SentiCircles.	1											1															

								Feedback Type								Subject Area																			
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								14	6	16	12	10	8	5	0	9	4	1	11	8	6	12	4	2	1	3	6	3	2	1	3			
UF-030	Sentiment Analysis	DE	1	If lists become long and complex, users suggested they would want to know about sub-groups such as the most influential users concerned – for example, domain experts such as journalists – and therefore a filtering function would be useful.	Support filtering by additional categories		Need to determine what the useful filtration categories could be			1		1								1															
UF-031	Sentiment Analysis	DE	2	The sheer volume of tweets that emerged at the initial search stage made it difficult for users to get an overview of the outputs.	Support filtering by additional categories		Too many tweets in sentiment analysis - need a way of cutting this down to be manageable					1								1															
UF-031a	Sentiment Analysis	DE	2	Particular concern was expressed about the visualisation of sentiment via 'smiley face' icons (see Figure 6 below). It was unclear what these meant – scales were deemed necessary for evaluation purposes.	Not relevant - superceded by SentiCircles, which support this.																														

								Feedback Type								Subject Area																				
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UF-032	Sentiment Analysis	DE	2	At a political and policy level, consideration was being given to abolishing "Betreuungsgeld" (care allowance). How, then, were a large number of tweets emerging with positive sentiment? MPs wanted to know what the basis for this was - who are the opinion makers upon which the data draws.	Transparency in Sentiment Analysis						1											1															
UF-033	Sentiment Analysis	DE	2	... interviewees – albeit with one exception - welcomed the ability to see sentiment develop over time; this was thought likely to be helpful in order to detect outliers. Here users were interested in knowing when there was a departure from the trend, and if so, why.		Sentiment over time is useful							1												1											

								Feedback Type								Subject Area																		
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								14	**6**	**16**	**12**	**10**	**8**	**5**	**0**	**9**	**4**	**1**	**11**	**8**	**6**	**12**	**4**	**2**	**1**	**3**	**6**	**3**	**2**	**1**	**3**
UF-034	Sentiment Analysis	DE	2	Incorporating the number of tweets, the period of time for the search, and the number of users contained in the search output, were thought to be potentially useful visual enhancements.	Add time period to sentiment analysis & Add number of users to sentiment analysis					1									1							1	1					
UF-035	Sentiment Analysis	DE	2	Overall, then, a key requirement was to be able to identify the Twitter actors involved in the search output and if possible order the tweets by number of followers or perceived impact. Additional supporting information about the topics and how the sentiment relating to them was assessed was also deemed necessary.	Identify Twitter users & Order users by number of followers & Order by user impact					1																	1					

								Feedback Type								Subject Area																			
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								14	6	16	12	10	8	5	0	9	4	1	11	8	6	12	4	2	1	3	6	3	2	1	3			
UF-036	Sentiment Analysis	UK	2	Concern was expressed that the positive/negative indicators for Tweets (for example in relation to the ULEV scenario) didn't seem to match a common sense reading of Tweets.		Question over results of first sentiment analysis version					1		1								1														
UF-037	Sentiment Analysis	UK	2	It was suggested that it might be better to give a numerical indication of positivity/negativity as a happy/unhappy categorization was somewhat blunt, and not very helpful when many tweets may be neutral.	Scales of positive / negative in sentiment analysis (superceded by SentiCircles)																	1													
UF-038	Sentiment Analysis	UK	2	Extending the sentiment function to documents was also deemed helpful – for example, online comments received in response to public policy surveys and consultations could then be analysed.	Apply sentiment analysis to documents as well as social media posts					1				1																					

								Feedback Type								Subject Area																			
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UF-039	Sentiment Analysis	DE	3	The initial results using the new sentiment tool, OU's "SentiCircles", suggested a more favourable outcome than the previous tools used in Toolbox v1 and v2. Perceptions of positive and negative sentiment appeared better aligned to the nature of the public policy debate than with the previous sentiment analysis tool, and MPs who saw it were more comfortable with the messages it conveyed.		General comment that the new SentiCircles is better than the old sentiment analysis							1																			

								Feedback Type								Subject Area																			
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UF-040	Sentiment Analysis	DE	3	The one concern of interviewees was that the lists for core and related terms include many words 'without a meaning' if they appear separately. These could be filtered out or grouped together to get combinations of words that provide greater meaning.	Group words in senticircles into phrases (words appearing together in sequence - also known as n-grams)					1												1						1								
UF-041	Sentiment Analysis	DE	3	The SentiCircle tool was also tested on the interviewee MP's twitter handle, @tosopiratas resulting in 194 tweets from 31 unique users over an eight-day period. The MP himself noted that the sentiment looked 'bad' overall and was interested in the reasons for this: was it because his own tweets had negative sentiment or because other twitter users were discussing him in a negative way?	Transparency in Sentiment Analysis								1							1																

								Feedback Type								Subject Area																				
User Feedback Number	**Component**	**Source**	**Prototype Version**	**Feedback Text (Quoted from D2.4)**	**Summary of Requirement**	**Feedback Summary**	**Developer Comment**	Usability	Bug	General Suggestion	Limitation	Suggestion to fix Limitation	General comment	Possible new tool		Twitter	Help	Control Flow	UI	Filtering	Transparency	Result Presentation Clarity	Location	Delete	Performance	Analyses over Time	Social Media User Analysis	Phrases rather than keywords	Language	URI Lookup	Support new data sources				
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UF-042	Sentiment Analysis	DE	3	Although Toolbox v3 and the SentiCircle tool was a marked improvement on previous prototypes, it was still not sufficiently clear how and why results have been arrived at.			Need to clarify how the SentiCircle analysis works														1															
UF-043	Sentiment Analysis	DE	3	The results table also shows Twitter names, hashtags and regular words in combination with the sentiment and the correlation, but these measurements are not intuitively understandable for average, non-technical users.	Senticircle table needs explanation of sentiment and correlation												1		1															
UF-044	Sentiment Analysis	DE	3	The need for more filter options was also noted – for example, to show only proper nouns or Twitter names as both lists (both core and related terms) can rapidly become quite long.	Support filtering by additional categories		Add proper nouns as filter option													1															

								Feedback Type								Subject Area																			
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UF-045	Sentiment Analysis	EU	3	Nonetheless, more explanatory information may be needed to explain the SentiCircle indicators – eg. what a sore of 0.6 means as opposed to 60% on earlier iterations of the toolbox.	Change factors on senticircles to percentages where possible														1			1													
UF-046	Sentiment Analysis	EU	3	However, they wanted to be able to run searches at different points in time and to be able to compare these in order to ascertain whether sentiment was changing.	Run searches at different time points and compare results		Multiple searches into one analysis? Multiple analyses' results presented as one																			1									
UF-047	Sentiment Analysis	EU	3	They also wished to see tweets for the entire core term – e.g. when it is a word combination such as 'electric car' or 'renewable energy' as splitting and presenting the tweets only per single word, loses the actual sense of the original core term.	Group words in senticircles into phrases (words appearing together in sequence - also known as n-grams)																							1							

								Feedback Type								Subject Area																			
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UF-048	Theme Overlap	DE	1	Users liked the concept of theme overlap analysis, but felt that the data that emerged – e.g. see Figure 3 - was insufficiently transparent to be useful – it was not clear how many paragraphs within a document the search was based on and what percentage of the document it concerned in contrast to the proportion of tweets	Clarify what is meant by "paragraphs" in theme overlap	Theme overlap analysis is unclear due to what is meant by "paragraphs"		1											1		1	1													
UF-050	Theme Overlap	DE	2	Here, the numbers assigned to the bars were deemed meaningless – it was unclear what the percentages meant. More information was necessary in order for the graphic to convey meaning in accurate terms – for example, what are the crucial and essential tweets that overlap?	Clarify what is meant by "paragraphs" in theme overlap	Theme overlap results are confusing		1											1		1	1													

								Feedback Type								Subject Area																	
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								14	**6**	**16**	**12**	**10**	**8**	**5**	**0**	**9**	**4**	**1**	**11**	**8**	**6**	**12**	**4**	**2**	**1**	**3**	**6**	**3**	**2**	**1**	**3**
UF-051	Theme Overlap	DE	2	At one interview, it was suggested that there would be more value in being able to group and contact Twitter users.	Group twitter users & Contact Twitter users		Categorise twitter users																				1				
UF-052	Theme Overlap	DE	2	One user suggested it would also be useful, to contact users regarding their constituencies or topic related issues of interest.	Group twitter users by constituency & Group twitter users by interest & Contact Twitter users																						1				
UF-053	Theme Overlap	EU	3	However, the interviewees wanted improvements in the visualisation of the information.		Theme overlap results are confusing		1			1											1									

								Feedback Type								Subject Area																			
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								14	6	16	12	10	8	5	0	9	4	1	11	8	6	12	4	2	1	3	6	3	2	1	3			
UF-054	Theme Overlap	EU	3	And the fact that the themes in the document match the discussions on social media does not automatically general real value – users still have to read the document, or at least key parts of it, in order to understand the context.		Theme overlap results are confusing		1			1											1													
UF-055	Topic Analysis	DE	1	Users also wanted greater flexibility in the selection of topics when looking at the themes of tweets.		topic analysis results are too restrictive					1											1													
UF-049	Topic Analysis	DE	2	The concept of 'main themes' was deemed confusing by some as no main topics are shown but rather most frequently used words / groups of words.		Topic analysis results are confusing		1			1								1			1													

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UF-056	Topic Analysis	UK	2	As with other users, the four words in a theme were not deemed particularly helpful and were not always interrelated in a helpful way. A most common words/statistics on word usage indicator was thought likely to be more helpful to users.	Replace topic analysis with word statistics	topic analysis results are not informative enough & topic analysis results are too difficult to understand					1	1										1										
UF-057	Twitter	DE	1	Some of the functionality supporting Twitter search was not working properly – e.g. the provision of a google map linked to tweet outputs - and was deemed of limited value if such searches could not be location based.		Twitter location needs improvement										1							1									
UF-058	Twitter	UK	2	Although a reject/delete option for Tweets had been introduced into this second version of the Toolbox, testing demonstrated that it did not work and needed refinement.	Add functioning delete option to Tweets	Twitter delete option does not work			1							1								1								

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UF-059	Twitter	UK	2	It was suggested that it would be useful to be able to search for Tweets that include “at least 2 of these words” (an open search returns too many irrelevant results, but requiring several words returns too few – a happy medium is required).	Support Twitter search based on combinations of keywords & Support simple single-word Twitter search	more precise twitter searches & use phrases in twitter searches										1												1				
UF-060	Twitter	UK	2	The ability to conduct future tracking/monitoring, was deemed a very helpful potential function.	Support monitor of twitter stream											1																

								Feedback Type								Subject Area																			
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UF-061	Twitter	UK	2	As many of the tweets were not country based they were deemed of limited relevance to Parliament/Government in terms of an assessment of public attitudes. For example, unless it explicitly wants to explore an overseas issue, a parliamentary committee investigating ULEV policy will primarily want to know about UK based opinion and sentiment, not that of countries such as Germany.	Support geographical location filtering of Tweets									1								1															
UF-062	Twitter	UK	2	It was also noted that there was a high level of commercial/advertisement tweets for which a delete/mark repeats option would be necessary.	Support categorise tweets by user type & Filter by this type					1										1						1									

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UF-066	Twitter	UK	2	Policy-makers could segment groups based on location so that if, for example, there was a particularly strong discussion about ULEVs or a related term in a certain area, that area could be targeted for a pilot or focused messaging.	Support geographical location filtering of Tweets											1							1									
UF-063	Twitter	DE	3	A search was conducted on the terms “NRW” and “#NRW”: the former proved problematic, possibly linked to the timeframe for collection, in that a lot of the content was pornographic material, while the latter linked to lots of sub-terms used on twitter (e.g. refugees).		General comment about noise on Twitter searches - needs further investigation										1																

								Feedback Type								Subject Area																			
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UF-064	Twitter	EU	3	Interviewees also reiterated concerns that the tool needs to be adjusted in order to enable the user to identify tweets from unique users and those that are commercial.	Support categorise tweets by user type & Filter by this type															1							1								
UF-065	Twitter	EU	3	All the end-user interviewees agreed that a very important requirement for social media analysis is the location choice, while performing a social media search. That means, end-users want to be able to choose location to narrow down the geographical scope of the audience and to be able to identify who stands behind certain tweets.	Support geographical location filtering of Tweets										1					1			1													
								14	**6**	**16**	**12**	**10**	**8**	**5**		**9**	**4**	**1**	**11**	**8**	**6**	**12**	**4**	**2**	**1**	**3**	**6**	**3**	**2**	**1**	**3**			