



# Text Analytics Process

This document provides a detailed explanation of the Feedback Ferret text analytics methodology and processes.

It gives more information about the text analytics process than is covered in the Feedback Ferret Text Analytics Product Guide.

In here, we explain how Feedback Ferret delivers better accuracy than other text analysis tools.

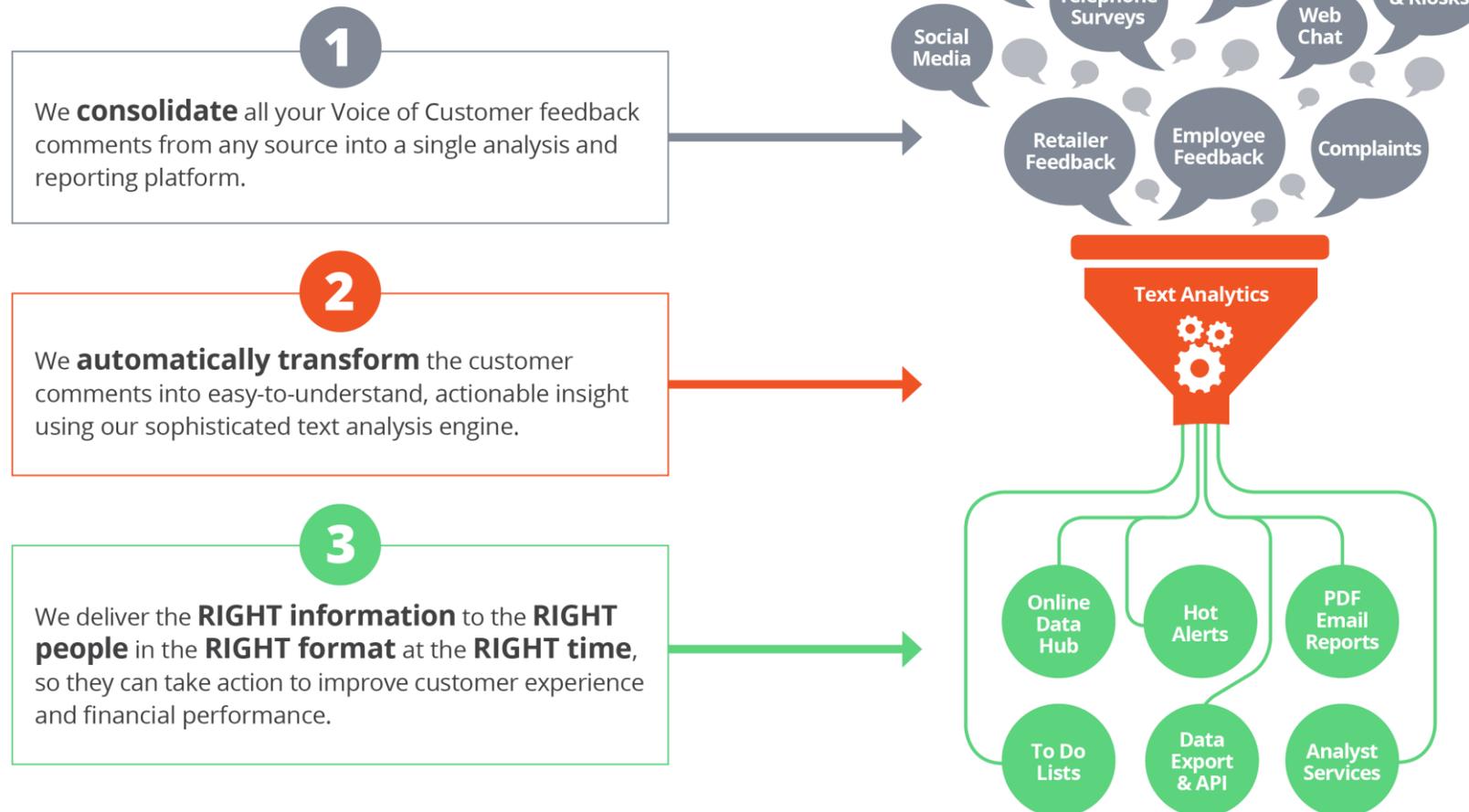
In particular, we want to draw attention to the fact that Feedback Ferret provides a fully managed service for text analytics. Clients do not have to do any coding or updating of topic definitions in any way to get rapid, consistent and accurate text analysis results.

**The contents of this document are confidential.**

Circulation beyond the designated recipients is prohibited unless authorised in writing by an officer of Feedback Ferret.

# Feedback Ferret Overview

Using text analytics, Feedback Ferret transforms customer feedback comments into actionable insight. We make it easy for you to improve your customer experience.



# Text Analytics - Overview

## Purpose of Text Analytics

- To extract all the relevant topics, sentiment and emotions from open ended customer comments.
- Consolidate feedback comments from multiple channels and sources, providing a unifying function for customer insight.
- Make this information easily available and usable across the organisation to who ever needs it to understand and improve customer experience, processes, products, services, etc.
- Enable you to engage your customers on an emotional level to enhance loyalty.

## Our Approach

- FF is a fully managed service.
- We carry out for you:-
  - ✓ All the text analysis coding;
  - ✓ All the data management and data processing;
  - ✓ Continuous monitoring of results and quality;
  - ✓ Continuous improvement of the text coding to ensure high levels of accuracy;
  - ✓ Regular re-processing of all historic and current data against updated Lexicon content and Reporting Topic definitions.
- You avoid the need for dedicated analysts to run the text analysis process.
- You simply receive and use the results to improve your customer experience, customer loyalty and satisfaction.

# The Text Analysis Process



- This flow chart shows the key stages of the Feedback Ferret text analysis processing, from receipt of comment data through to the results output.
- Each stage is described in more details on the following pages.

# The Text Analysis Process



- Customer feedback comments can be client-generated and automatically uploaded to Feedback Ferret for processing, or we can operate the feedback channels for you.
- Feedback channels and formats can include:-



- We automatically take in the verbatim comments, as well as other structured survey data, and other metadata about the customer to enhance the subsequent analysis and reporting.

# The Text Analysis Process



- All text analysis is carried out in English.
- We can handle text analysis from any source language. We automatically translate all non-English text into English.
- We use Google Translate for near-real time automated translations, which delivers 'good enough' English text. The Feedback Ferret technology is designed to understand badly phrased sentences, foreign language format and content do not generally present a problem.
- Results are regularly reviewed to assess the suitability of Google for all languages.
- In our database, we hold the original language alongside the English translation. This has the added benefit of providing everyone in the organisation with a *lingua franca* for better understanding of all feedback comments in all reporting tools.



# The Text Analysis Process



- All 'raw text' comments are processed against the Feedback Ferret 'Lexicon'.
- The Lexicon is a vast dictionary of contextual phrases – organised into Categories.
- There is a single Feedback Ferret Lexicon that is used for all client text analytics.
- Every client benefits from the 'communal' nature of the Lexicon – phrases and Categories updated for one client benefit the text coding accuracy for all clients.
- Where required we can limit specific categories to be processed only for nominated client projects.
- There are more than 10,500 Categories, each with potentially millions of contextual phrases.
- The Lexicon is continuously compiled from 'Case Based' human interpretation of feedback content to ensure accurate contextual meaning.
- More than 70 man-years of development has gone into building the Lexicon – and it continues to be updated daily by the Feedback Ferret Lexicon Team, based on continuous monitoring of all client text analysis results.
- During the automated text analysis processing, every sentence in the source data comments is checked against every contextual phrase in the Lexicon.
- Each sentence may therefore have none, one or multiple Categorisations.
- There is no limit to the length of the comments that we analyse.
- The Lexicon handles all spelling errors, poor grammar, punctuation errors, etc. There is no need to correct or update any poor quality original text.
- Within the Lexicon, we customise content to meet the requirements of every client.

# The Text Analysis Process



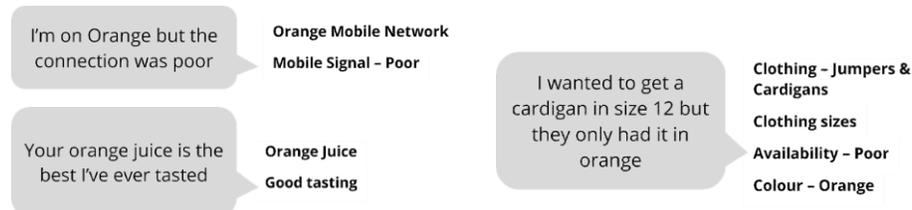
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- Brand names, products, locations, outlet names, abbreviations, key staff, etc. are all accommodated in the Lexicon to enable accurate categorisation of company information.
- Contextual phrases enable the Lexicon to distinguish the difference between the meaning of ambiguous words, as well as false negatives/false positives that typically cause difficulty for automated text analysis, e.g.:-

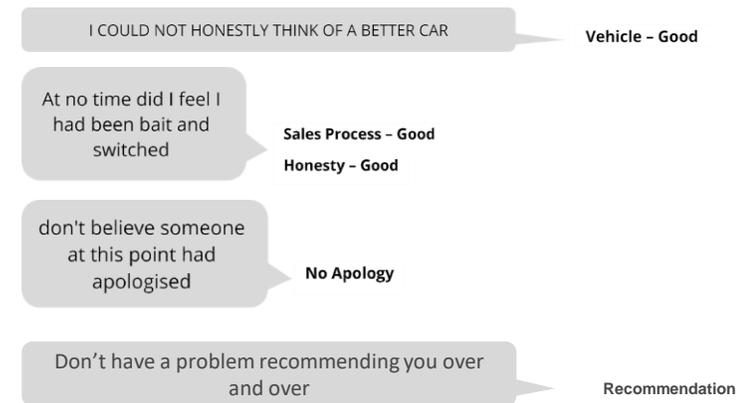
## Ambiguous word: e.g. Bill



## Ambiguous word: e.g. Orange



## False Positives / Negatives



## Masking / De-duplication

- The lexicon processing automatically masks out / de-duplicates potential overlapping phrase matches, for example in this sentence:  
    'I was not entirely happy with the outcome'  
    ... the Lexicon would match both the phrases:  
    'happy with the outcome'  
    'not happy with the outcome'
- During the Lexicon de-duplication process only the correct phrase match is retained and used for topic definitions and sentiment scoring.

# The Text Analysis Process



## Sentiment Scoring

### What is the Sentiment Score?

- Sentiment Scoring is the process of computationally identifying and scoring customer verbatims to determine whether the writer's attitude towards a particular topic, product, etc. is positive, negative, or neutral.

### How is the Sentiment Score Calculated?

- Lexicon Categories have varying levels of positive or negative Sentiment scores, based on their reflection of customer attitude.
- Sentiment scores can be set for individual categories for individual clients.
- Sentiment Score is calculated from the net score of all positive and negative Category hits within each comment, using the contextual phrase matching in the during the automated text analysis process.

### Using Sentiment Scores

- Sentiment Scores are grouped into 7 bands for practicality.



- Sentiment is an extremely effective proxy for Satisfaction Rating for data where there is no rating score.
- The example below gives an illustration of how sentiment scoring is calculated.

"Morgan our salesperson *deserves 5 stars*. She *went above and beyond our expectations* to *find the right vehicle* for our family. There was a *constant flow of communication* from our initial phone conversation. However, *I was surprised* that on a Saturday there was *only one finance person working*. Experienced a *3hr wait, longer than I would expect* as on average we purchase a car every year."

*Green Text = Positive Sentiment Category*  
*Red Text = Negative Sentiment Category*  
For this block of text, the sentiment score is:-  
 $+4 -3 = +1$

# The Text Analysis Process



- The output from the Lexicon processing is the coding of sentences against the Lexicon Categories.
- These granular Category hits are used in the downstream Reporting Topic definitions to create the customised Topics in all reporting and other outputs.
- Category hits – and the contextual phrases causing the hits - are continuously monitored by the Feedback Ferret Lexicon Team to ensure consistent and accurate results.
- These Quality Assurance results are used to prioritise any enhancements to Lexicon content.
- In addition to checking what Lexicon phrases *have* been hit, we also check any relevant missed text, and update the Lexicon accordingly. This fixes historical ‘missed’ phrases.
- This ensures text analysis accuracy at the two important levels:-
  - Extremely high levels of correct topic extraction from the raw text;
  - High levels of accuracy of the Categorisations into which sentences are coded by the contextual phrases in the Lexicon.

# The Text Analysis Process



- We create **Reporting Topics** to assign the text analytics results at a level of detail that is required by the business.
- Reporting Topics are customised to each client.
- Reporting Topics typically evolve over time as the content of the customer comments change, and as the needs of the business evolve.
- A typical client set of Reporting Topics may total 300-600 separate Topics, describing 360° of the customer experience with the company, its products and services.
- The definitions of the Reporting Topics enables us to provide the appropriate level of detail for each subject area for each client.
- The preparation of the set of Reporting Topics is a collaborative exercise with Feedback Ferret with each client.
- Reporting Topics are compiled from combinations of:-
  - Category hits
  - Survey question
  - Sentiment scores
  - Other metadata in the original source data.

# The Text Analysis Process



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- For example, if telephone service is a minor part of the business, we could merge multiple issues into a single Topic: Telephone – Poor.
- Conversely, if the call centre is a focal point and a more detailed analysis of their performance is required, we can deliver extensive, detailed Reporting Topics on telephones – as shown on the right.
- Metadata provided with the feedback can be used for topic definitions, for example, a question label such as:-

*“What was your experience of the Customer Services team?”*

... with the answer:-

*“They were terrific – superb response”*

... would then be allocated to the Reporting Topic:-

Customer Services – Good

... on the basis of the known question subject matter in combination with the generic positive statement.

## Rolled-up Topic:-

- Telephone Service – Poor

## ...or granular, detailed Topics:-

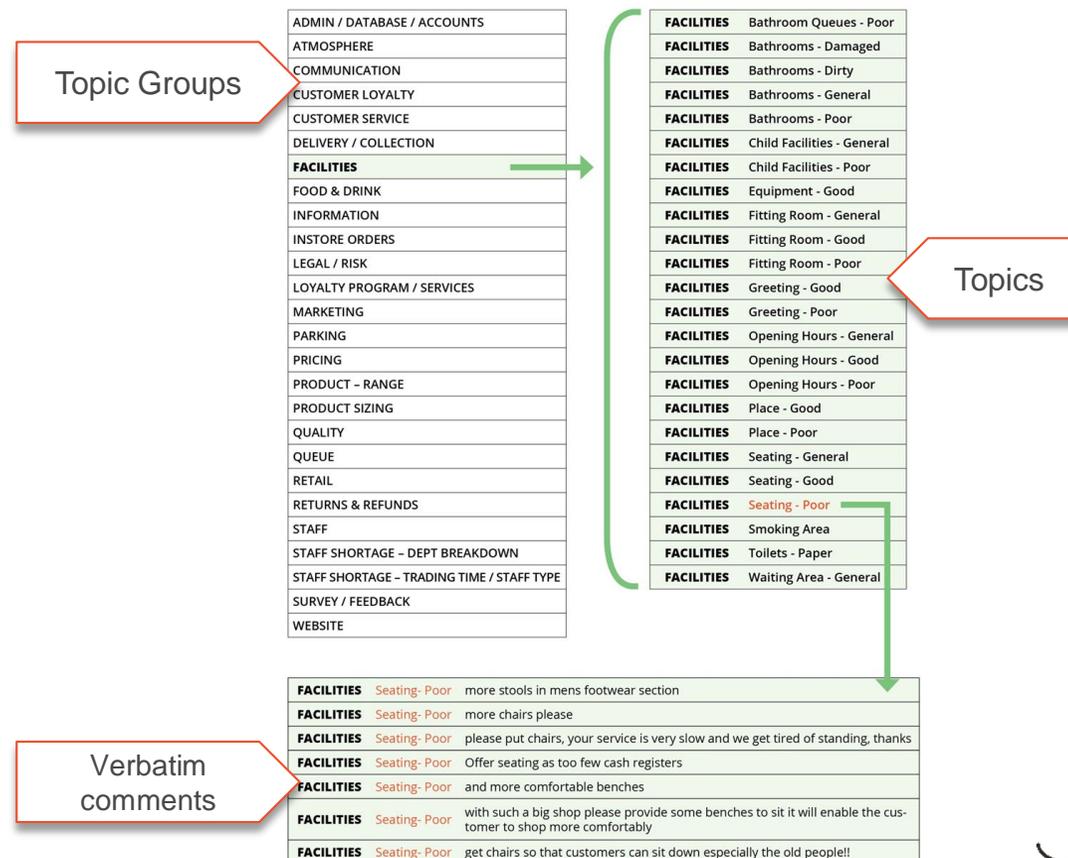
- Telephone – Hard to Find Numbers
- Telephone – Long Answer Times
- Telephone – Not Answered
- Telephone – Multiple Transfers
- Telephone – Poor Language / Strong Accents from Agents
- Telephone – Overseas Agents
- Telephone – Poor Enquiry Response
- Telephone – Lack of Understanding
- Telephone – Poor Knowledge
- Telephone – No Follow-up Calls

# The Text Analysis Process



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- Reporting Topics are organised into a simple 2-tier hierarchy – Groups and Topics.
- Drill-through is enabled in Feedback Ferret reporting tools so that you can quickly get from the Topics to the original comments from customers to understand the full context of what customers are saying.



# The Text Analysis Process



- Reporting Topics undergo continuous **Quality Assurance (QA)** monitoring.
- Representative samples of results are regularly reviewed for accuracy.
- The QA results prioritise the steps taken by the Lexicon Team to update both the Reporting Topic definitions, as well as further updates to the Lexicon contextual phrase coding.
- The QA results are available for client review, and we work with clients to ensure we prioritise updates in the most important areas for the business.
- After the Reporting Topic definitions and the Lexicon are updated, the reprocessing of all data ensures that every customer comment in the database – right back to the earliest record – is updated to the latest version.
- Feedback Ferret ensures better than 93% accuracy across the total set of Reporting Topics. This exceptional level of accuracy is typically reached after 2-3 months of a project starting, with numerous cycles of processing, QA and updating.
- This is all part of the standard fully-managed service from Feedback Ferret. Unlike most other text analysis tools, our Lexicon team carries out the laborious task of monitoring and updating the Lexicon and Reporting Topics on a continuous basis to ensure high accuracy results that can be relied on.

# The Text Analysis Process



- With **Impact Analysis**, we uncover what's really driving your customer loyalty, scores and sentiment, and help you move from insight to prioritisation.
- Using predictive correlation modelling algorithms, we automatically identify the key topics in your feedback that have the greatest impact on your customer scores and outcomes.
- This allows you to understand the topics that really drive customer satisfaction, sentiment, loyalty and defection, or recommendation.
- Impact Analysis helps you to prioritise the actions you then need to take, so that you can focus on these key drivers to head off negative experiences and carry out root cause analysis to help reduce or eliminate these issues.

- Impact Analysis modelling also calculates the **Defection Risk Score** to indicate the likelihood the customer will defect at their next purchase.

**Customer Loyalty Score**  
Calculated per customer from:-

- survey rating score
- sentiment score
- loyalty / recommendation statements



**Predictive modelling**

Pearson Correlation Coefficient; calculates the impact each Topic has on the Customer Loyalty

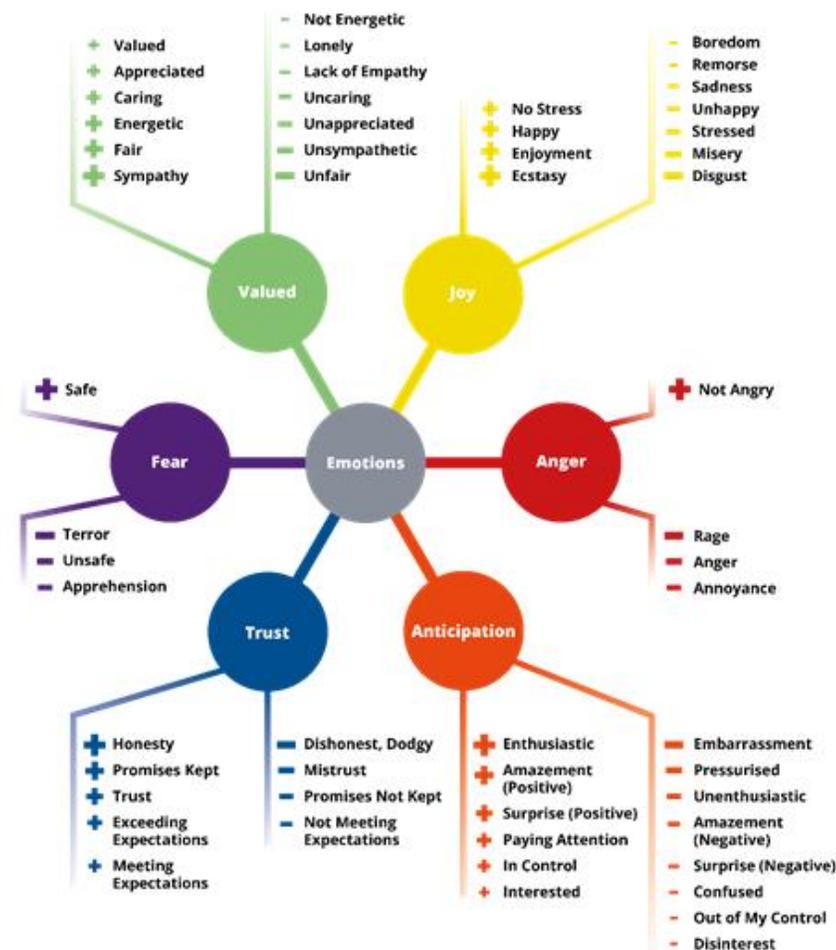
Significant topics, ranked on how positively and negatively they affect customer loyalty

Impact Analysis – Top 20 Topics			
Rank	Topic	Impact Analysis Index	Volume
1	Would Recommend	0.44	1,600
2	Generally Dissatisfied	-0.38	7,300
3	Defection Signals - General	-0.30	271
4	Problems Unresolved	-0.25	1,549
5	Customer Service - Poor	-0.24	1,046
6	Communication Other - Poor	-0.24	1,159
7	Faults	-0.23	2,866
8	Friendliness - Good	0.22	8,614
9	Problems - General	-0.22	4,826
10	(Emotion Joy Negative) Unhappy, Unloved	-0.22	819
11	Servicing - General	-0.21	5,141
12	Inspection - Poor	-0.19	692
13	Dealership - Poor	-0.18	654
14	Costs - High	-0.18	1,344
15	Manners - Poor	-0.18	421
16	Helpful	0.18	7,539
17	Servicing - Not Done	-0.17	906
18	Would Not Recommend	-0.17	144
19	Generally Satisfied	0.17	24,879
20	(Emotion Valued Negative) Lack Of Respect	-0.16	368
21	(Emotion Trust Negative) Not Meeting Expectations	-0.16	1,391
22	Telephone - No Follow-up	-0.16	416
23	Staff Quality - Good	0.16	6,787
24	Damage	-0.16	1,000
25	Retention Signals - Buy	0.16	200

# The Text Analysis Process



- Forrester Research shows that for 17 out of 18 companies studied, **customer emotion** is the most significant factor in customer loyalty.
- Alongside the normal Categorisation and Reporting Topics, Feedback Ferret extracts up to 55 emotion topics from every comment, with weighting and intensity scores for each positive and negative emotion.
- Emotion Scores then become another valuable 'rating' for the business, enabling hotspots of positive and negative experiences to be quickly identified and acted on.
- Emotion Scores can then be calculated for:-
  - Each customer
  - Each touchpoint / interaction / transaction
  - Each product and service
  - Each outlet
  - All stages of the Customer Journey
  - Trends over time
  - Key hotspots that trigger exceptional positive and negative emotions.
- Like any of the Reporting Topics, users will be able to drill down into the individual Emotion Topics and to see the issues customers are expressing.
- Intersecting the Emotion Topics with other Reporting Topics within verbatim comments will provide a powerful diagnostic solution for clients to quickly act on this range of emotions – enhancing and exploiting the positives, whilst addressing and weeding out the negatives



# The Text Analysis Process



- When all text analysis processing is completed, results are uploaded to the Reporting Database.
- Results are hosted on the Amazon Web Services (AWS) cloud platform. Large client databases are hosted on Amazon RedShift databases, optimised for high performance whilst storing vast volumes of customer feedback data.
- Amazon hosting can be located in distinct geographic locations to meet client data management compliance requirements.
- Numerous Feedback Ferret tools are directly integrated into the Reporting Database platform, enabling API integration, results interrogation, analysis, reporting, hot alert management, task management, data exports and more. More details of these tools is provided in other Feedback Ferret documentation.
- Clients can also access the cloud-hosted results database directly with their own preferred Business Intelligence (BI) tools such as Tableau, Cognos, Business Objects, etc.

# Timing



- End-to-end processing of results can take from as little as 30 minutes for regular feedback updates, through to several hours for large batches of records.
- When all legacy data for a client is reprocessed against updated Lexicon and Reporting Topic definitions, this can take several days when there are millions of records to bring up to date with the latest coding structures. This is carried out in the background, enabling all current applications to continue uninterrupted.
- The text analysis processing is extremely processor-intensive work, with extensive text comparisons carried out between all the Lexicon phrases and all the customer comment text.
- All processing is carried out on the Amazon Web Services cloud, with hundreds of servers commissioned and deployed for the duration of the processing.

# Summary

- Feedback Ferret's text analytics is world class, delivering highly accurate analysis of customer comments.
- Reporting Topics are tailored to each client's requirements.
- All the text analysis coding instructions and processing is carried out by Feedback Ferret as a fully-managed service.
- In addition to detailed Topic coding, the text analytics engine generates accurate Sentiment Scores and Emotion Scores to help Customer Experience professionals use the insight to maximise customer loyalty and customer value.

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