

Approach to Market (ATM) – Voice Analytics & Voice to Text Research/Analysis

Reference ID: CPX 326

Presented by



AGENDA

- CPX326 Summary
- ASIC Target market insights
- Best Practice Conversation Analytics
- ATM Project:
 - Scope
 - Methods
 - Findings
 - Challenges
- Market Application



Summary – Call Journey Universal and ubiquitous

ATM CPX326 PROJECT SCOPE

- 10 different insurance companies
- Small Sample size of 1710 calls
- Wide range of audio
 - Quality from poor to excellent
 - Call duration of 0 secs to 10+mins.
- TASK: Using Conversation Analytics, interpret ASIC guidelines and risk definitions to assess:
 - inappropriate sales techniques
 - inaccurate or inappropriate information about products
 - compliance with financial services laws

• *Normally, we work with one client and one type of audio and a calibrated/collaborated approach to use case definitions and structure.*

Summary – Call Journey Universal and ubiquitous

CONCLUSIONS AND FINDINGS

- **Conversation analytics can definitely be used to identify inappropriate behaviour (e.g.) to ensure that:**
 - inappropriate sales techniques are not used
 - inaccurate or inappropriate information about products is not provided
 - compliance with financial services laws are followed.
- A mix of both **sentiment** (WHAT was said) and **acoustic** (HOW it was said) analytics is **best practice** in capturing conversation insights
- **Greater Success via greater transcription accuracy** will be dependent on the quality of the call recordings (G.I.G.O)
- All participants in the **industry should be recording calls with high quality settings** (dual channel, bit rate > 32 Kbps)
 - In most instances, just a change setting in their current technology stack
 - *Many of our customers are moving to high quality dual channel audio- in most instances, just a change setting in their current technology stack is required with minimal cost implications (mainly on storage). It is really a de facto measure of constituents commitment to conduct risk management*
- The call samples provided through the Mini Trial were mostly poor in quality but “okay to good” output was still possible. Despite the quality of audio, we could still deliver effective insights

Summary – Call Journey Universal and ubiquitous

INSIGHTS

- Based on live/current experience we know that **ASIC constituents will want to consume voice data in their own analytics environment** and augment voice data with other data sets when assessing conduct risk
 - In other words, customers will want conversation data to be provided into their own Business Intelligence/Analytics environment and not be tied to one particular vendor platform
- **Universal solutions (like Call Journey) are best placed to solve this challenge for ASIC Constituents (and potentially ASIC themselves)**
 - Best in region conversation Speech to text accuracy (developed in Australia for Australia)
 - Advanced analytics model including flexible data output for upstream analytics (constituents want to augment analytics stack, not to add other software to it)
 - Highly advanced and engineered environment to cater for multiple audio environments and sources
 - Willingness and capability to work with ASIC (using current customer real life experience) to finalise customer search frameworks
 - Industry leading sentiment and acoustic algorithms

Recommendations

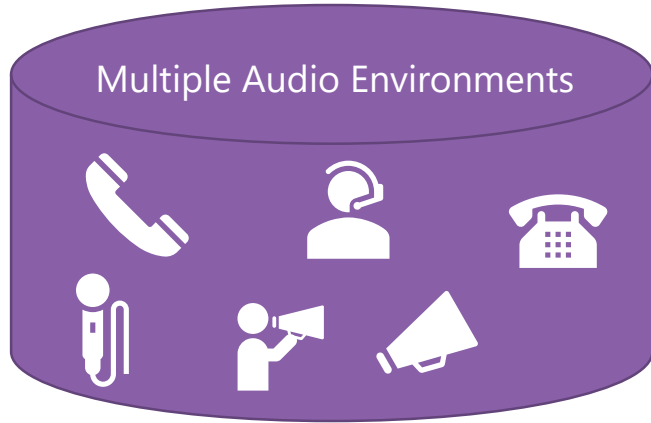
- **Conversation analytics should be adopted by all constituents to identify inappropriate behaviour:**
 - Constituents will get a significant uplift in ability to assess conduct risk when using comprehensive processes like Call Journey provides and combining the conversation data with other upstream data sets
- **ASIC should direct constituents to move to minimum standards in call recording.**
 - Minimum standards would be that ALL participants in the industry should be recording calls with high quality settings (dual channel, bit rate > 32 Kbps), open source
 - Technology – our platform is engineered to cater for:
 - Noisy background
 - Mobile phone audio
 - Mono (single channel calls) – where both callers are on the same channel
- Conversation Analytics technology should cater for **both sentiment and acoustic assesment.**

Recommendations

- Output from Conversation Analytics activity should be easily consumed in the customers up stream analytics environment and **should not be reliant on a vendors software solution.**
- Further we recommend that:
 - ASIC should encourage constituents to utilise/consider adaptive conversation analytics frameworks like Call Journey's within their upstream data environment.
 - ASIC take the opportunity to ratify/endorse Call Journey's approach to create structured search frameworks for conversation analytics. As an example Call journey is working with key analytics providers (i.e. SAS, Microsoft, Tableau) to create a conduct risk assessment framework for Conversation Analytics in direct correlation to ASIC guidelines. We understand ASIC can't recommend – we believe a good approach here would be to endorse the framework/approach
- **Productivity and Coverage benefits** can be of benefit for ASIC themselves in it's capacity as Australia's integrated corporate, markets, financial services and consumer credit regulator.
 - ASIC could consider adopting Call Journey's EVS process (audio ingestion, processing and data output via structured search algorithms) internally for improved constituents governance. Further to this, with ASIC already having an Advanced Analytics environment delivered by SAS, we could via our SAS partnership collectively create a leading risk assessment environment in the ASIC business intelligence practice.

Conversation Analytics Environment – Call Journey connects end to end

Can Integrate as part of Call Journey suite



PCM8 8 bit, 8 kHz, Mono
 PCM16 16 bit, 8 kHz, Mono
 PCM16 16 bit, 8 kHz, Stereo
 GSM FR 8 Khz, Mono
 G.711 8 bit, 8 kHz, Mono
 G.723 VAD 8 bit, 8 kHz, Stereo
 PCM8 8 bit, 16 kHz, Stereo
 PCM16 16 bit, 16 kHz, Mono
 PCM16 16 bit, 16 kHz, Stereo
 G.711 8 bit, 16 kHz, Mono
 G.711 8 bit, 16 kHz, Stereo

PCM8 8 bit, 8 kHz, Stereo
 G.711 8 bit, 8 kHz, Stereo
 G.729 8 bit
 MSADPCM 4 bit, 8 Khz, Mono
 MSADPCM 4 bit, 8 Khz, Stereo
 MSADPCM 4 bit, 16 Khz, Mono
 MSADPCM 4 bit, 16 kHz, Stereo

350+ Variations of audio format

Highly Advanced and Refined Australian Language Model



FEATURES



High Speed ASR
 Lightning Fast
 Speech-to-text



Smart Transcript
 Search what's
 said and who
 said it



PCI Redaction
 Automatically
 remove Payment
 Card information
 from audio
 recordings.



Model Building
 Accelerates
 'learning' and
 accuracy



**API-based
 Integration**
 Let our features
 enhance yours
 Build your own
 Audit Apps



**Hyperphonic
 Search**
 Sounds &
 phrases searched,
 instantly



AUTO NOTIFY
 Get key risk issues
 notified to key staff
 immediately



**Emotional
 Intelligence**
 Behavioural
 analysis of
 human speech



**Onsite or in-
 cloud**
 Choose where
 your data lives

ASIC Conduct Framework

Integrated as part of Call Journey Suite

Can Integrate as part of Call Journey suite



listen better

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The problem – voice is invariably recorded but ‘rarely heeded’

Unanalysed calls

Each conversation that takes place in an organization poses an **opportunity** or a **risk**.

Currently, in an average ten-minute call, an alarming 98% of the conversation is largely ignored with most of the focus for analysis aimed at the post-call survey.

- Only 1 percent of calls is analysed (QA).
- Less than 2 percent of customers provide usable inputs from which (NPS) scores can be calculated

Voice data: the missing piece

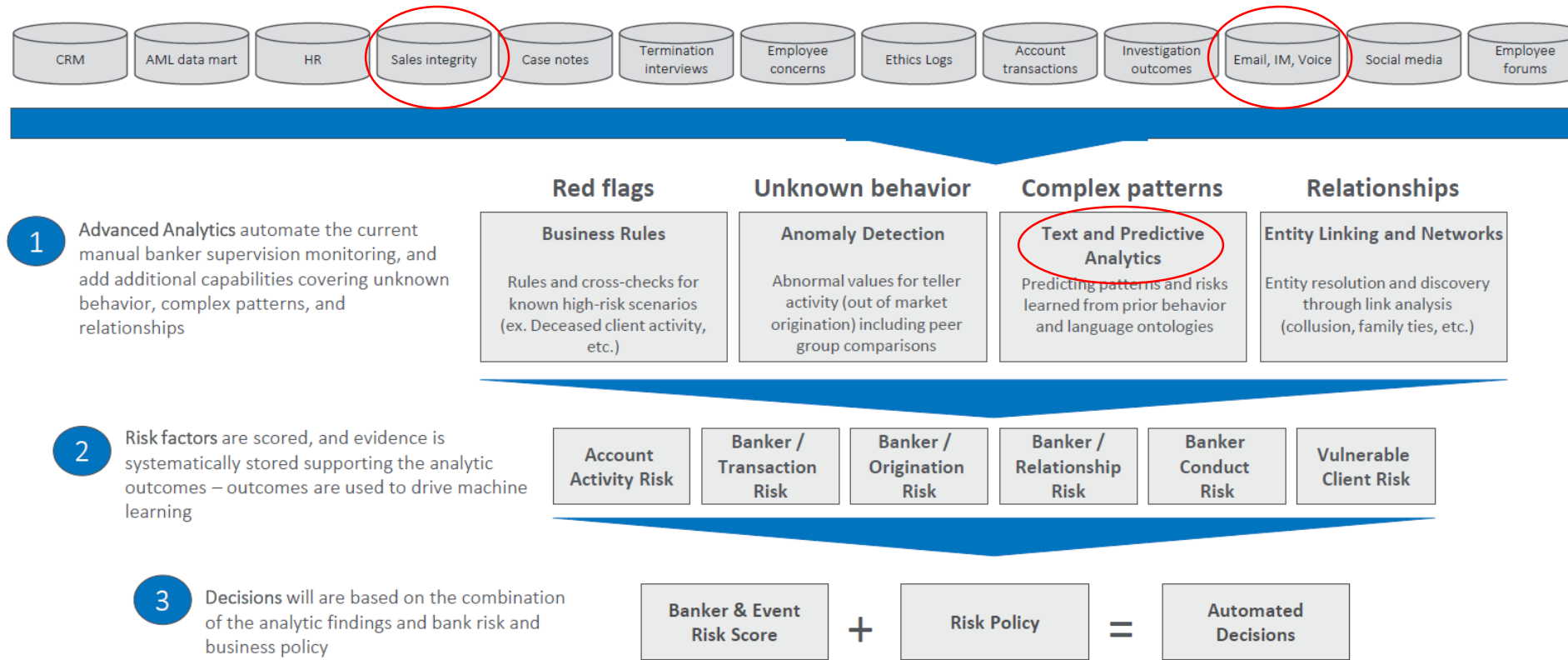
Despite the rise of Omnichannel Customer Engagements, voice interactions continue to play a vital role in all business today.

But **Voice Data** is often overlooked in the data mix.



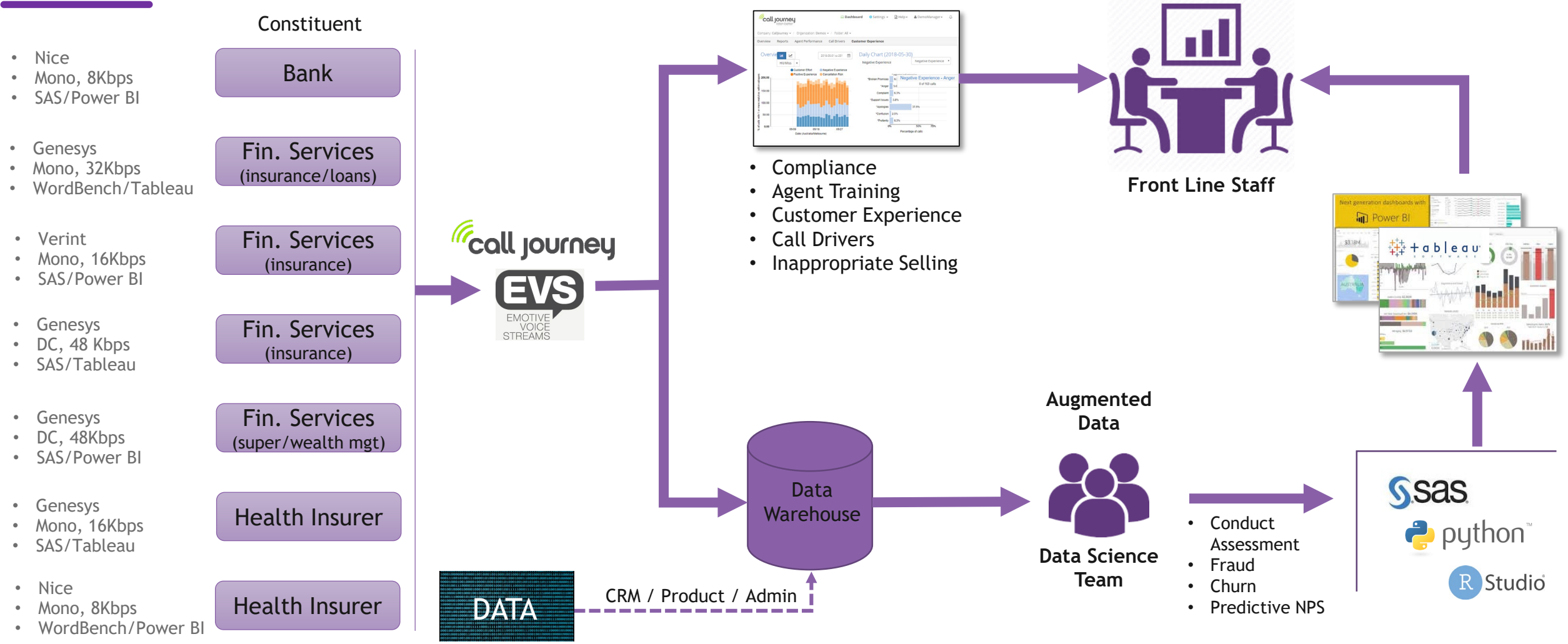
Conversation Insights - key to augmented data assesment

Banker Supervision Conceptual Analytics Architecture



Current Industry Practices – who is serious about *hearing* customers?

A snapshot of what we know of your target industry





More than speech to text – conversation analytics

```
1 |  
2 | "confidence": 0.84,  
3 | "doneDate": "2017-09-27 02:51:23.238964",  
4 | "utterances": [...  
3793 | ],  
3794 | "sentiment": "Mostly Positive",  
3795 | "nchannels": 1,  
3796 | "recvtz": [  
3797 |   "EDT",  
3798 |   -14400  
3799 | ],  
3800 | "gender": "female",  
3801 | "source": "CallRecordings_20170925_174541.mp3",  
3802 | "client_data": {  
3803 |   "WrapCode": "Account Status",  
3804 |   "CallLength": "00:03:19",  
3805 |   "datetime": "2017-09-25 17:45:41",  
3806 |   "CCA": "AVCE",  
3807 |   "LDC": "3038224564",  
3808 |   "CallingNumber": "7605156514",  
3809 |   "Language": "English",  
3810 |   "audio_properties": "MPEG Audio (Layer 3), CBR, 32.0 kb/s, 22050 Hz, , 1 ch",  
3811 |   "CallDirection": "Inbound",  
3812 |   "CalledNumber": "7077688015",  
3813 |   "jm_version": "2.1.0-8",  
3814 |   "agentid": "victoria.haynes",  
3815 |   "TotalConnectLength": "00:10:01",  
3816 |   "AnswerPoint": "Billings - Tier 1"  
3817 | },  
3818 | "app_data": {  
3819 |   "agent_channel": 0,  
3820 |   "agent_clarity": "0.846",  
3821 |   "agent_emotion": "Positive",  
3822 |   "client_emotion": "Positive",  
3823 |   "overall_emotion": "Positive",  
3824 |   "client_gender": "female",  
3825 |   "datetime": "2017-09-26 01:38:41 UTC",  
3826 |   "scorecard": {},  
3827 |   "client_clarity": "0.839",  
3828 |   "overtalk": null,  
3829 |   "url": "https://wordbench.calljourney.com/fileDetails/BPAInternational-AVCE/AVCE1",  
3830 |   "words": 405,  
3831 |   "client_channel": 1,  
3832 |   "duration": "0:03:18",  
3833 |   "diarization": 0.48852261605265335,  
3834 |   "agent_gender": "female",  
3835 |   "silence": "0.417"
```

Data is king and we provide the most comprehensive conversation data in the market

- With **EVS** a 3 minute call produces over 3,800 lines of structured (AND very valuable) data
- There are three main levels of data – **Level 1 (Conversation)**, **Level 2 (Utterance)** and **Level 3 (Words)**
- **Level 1 (Conversation)** - provides total call stats. e.g.
 - Confidence (overall probability)
 - Sentiment and emotion
 - Gender by channel
 - Client specific data
 - Number of words
 - Silence on call
 - Duration



3 level process to dissecting the data file

```
1  {
2  "confidence": 0.84,
3  "doneDate": "2017-09-27 02:51:23.238964",
4  "utterances": [
5    {
6      "emotion": "Neutral",
7      "confidence": 0.79,
8      "end": 4.78,
9      "sentiment": "Neutral",
10     "recvtz": [ ...
13     ],
14     "gender": "female",
15     "sentimentex": [ ...
21     ],
22     "start": 1.38,
23     "doneDate": "2017-09-27 02:51:12.556247",
24     "recvdate": "2017-09-27 02:51:11.012009",
25     "events": [ ...
129    ],
130    "metadata": {
131      "source": "CallRecordings_20170925_174541.mp3",
132      "model": "eng1:callcenter",
133      "uttid": 0,
134      "channel": 0
135    }
136  },
```

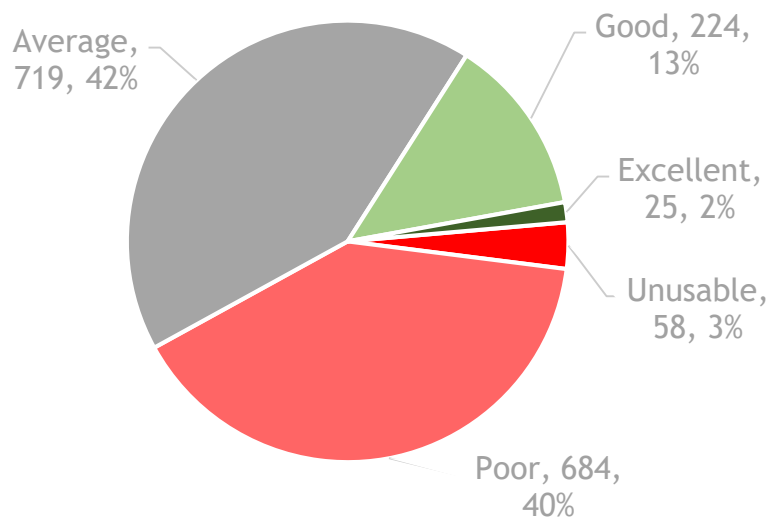
- **Level 2 (Utterance)** provides utterance statistics e.g.
 - Confidence (overall probability)
 - Sentiment and emotion
 - Gender
 - Start and end times
 - Utterance ID and Channel ID
- **Level 3 (Words)** provides word stats. e.g.
 - Word/s spoken
 - Start and end times of each word
 - Confidence (overall probability) for each word

Scope

10 clients, 1,710 calls, and a wide range of audio quality and duration. We were asked to interpret ASIC guidelines and risk definitions.

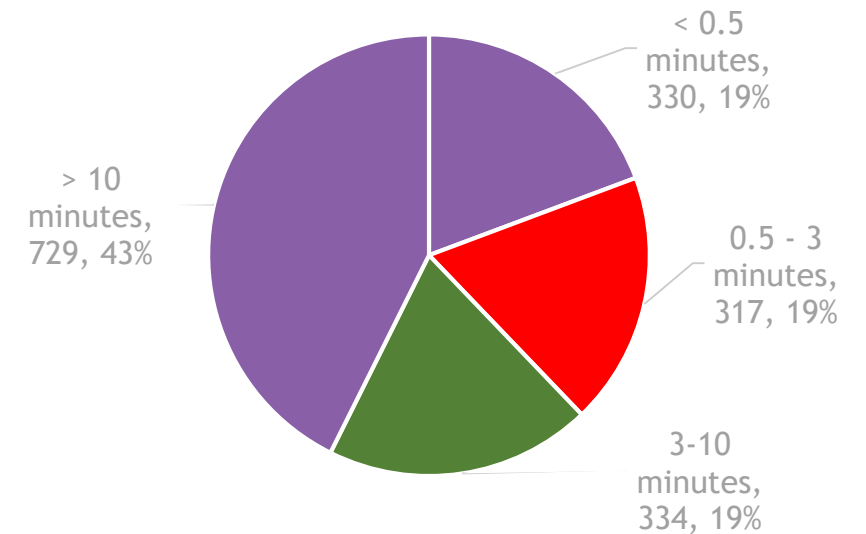
Normally, we work with one client and one type of audio and a calibrated/collaborated approach to use case definitions and structure.

1,710 Calls by Quality



10 Insurers
CBA
CMLA
Freedom
Hannover – A&G
Hannover – Real
Nobleoak
Onepath
Select AFSL
Suncorp
TAL

1,710 Calls by Duration

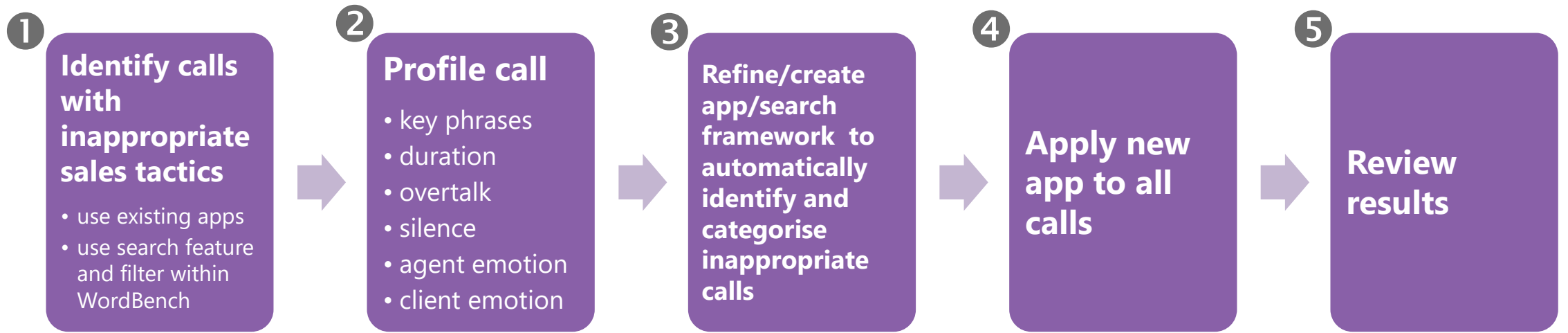


TASK: Identify inappropriate sales behaviour using conversation analytics

Methods

We would normally work with a client to profile a call.

For this project, we had to use our industry knowledge (existing customer engagements) and ASIC insights (Rep 587) to profile calls with inappropriate behaviour.



Inappropriate Behaviour Broken Down Into Six Categories

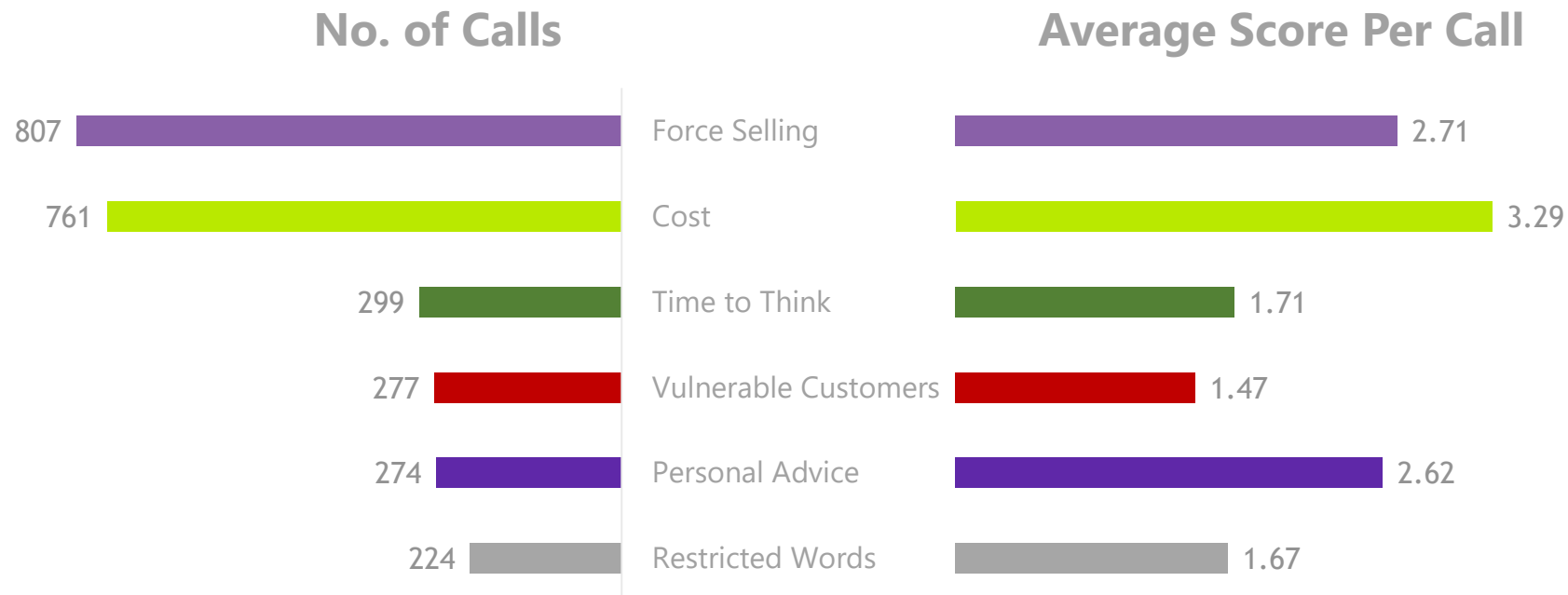
- Force selling
- Vulnerable customers
- Cost
- Time to think
- Personal advice
- Restricted words

All 1,710 calls were scored with many low duration calls receiving zero scores.

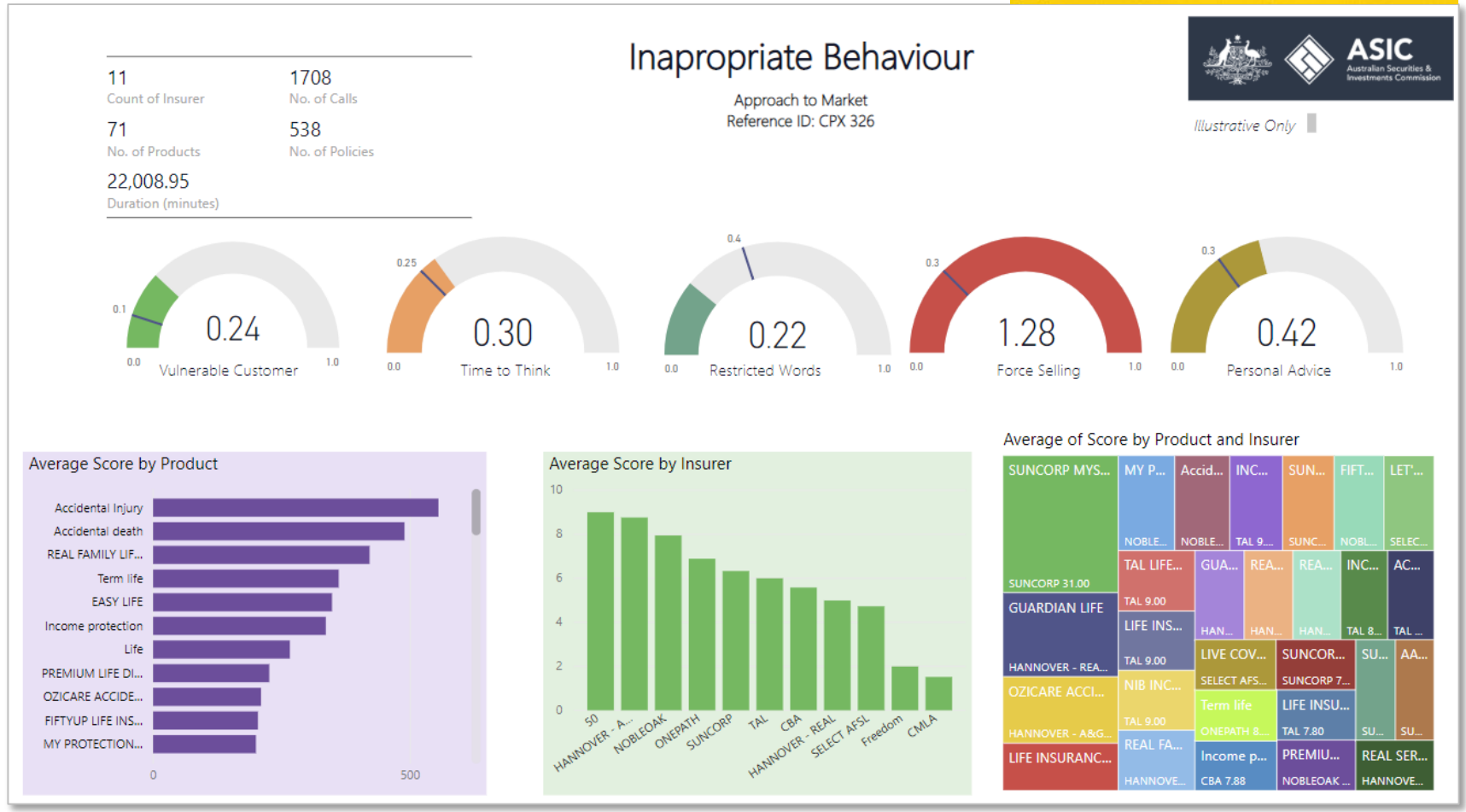
With the tight timetable, there was limited time to review results. What was achieved was essential “out-of-the-box” with minimal customization.

Findings - Misconduct Identification

Forced Selling and Cost were the two highest rating categories, both in terms on number of calls scoring hits and the number of hits per call.



Findings – Clients will create dashboards in their own environment relative to individual needs



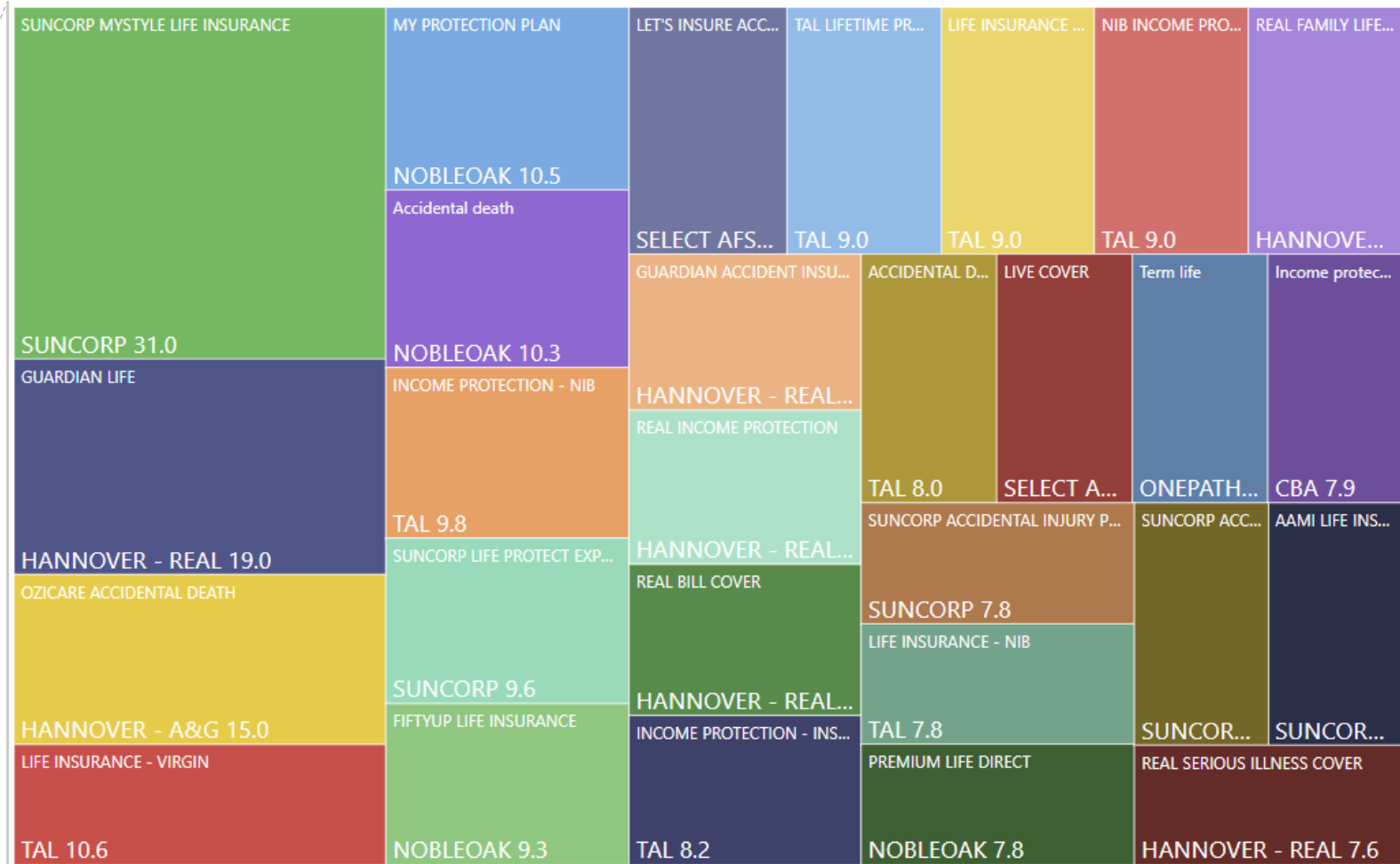
Findings

- Highest ranking score at 31 was for Suncorp Mystyle Life Insurance

Category	Hits
Force Selling	10
Cost	8
Time to Think	6
Vulnerable Customers	6
Personal Advice	1
Restricted Words	0

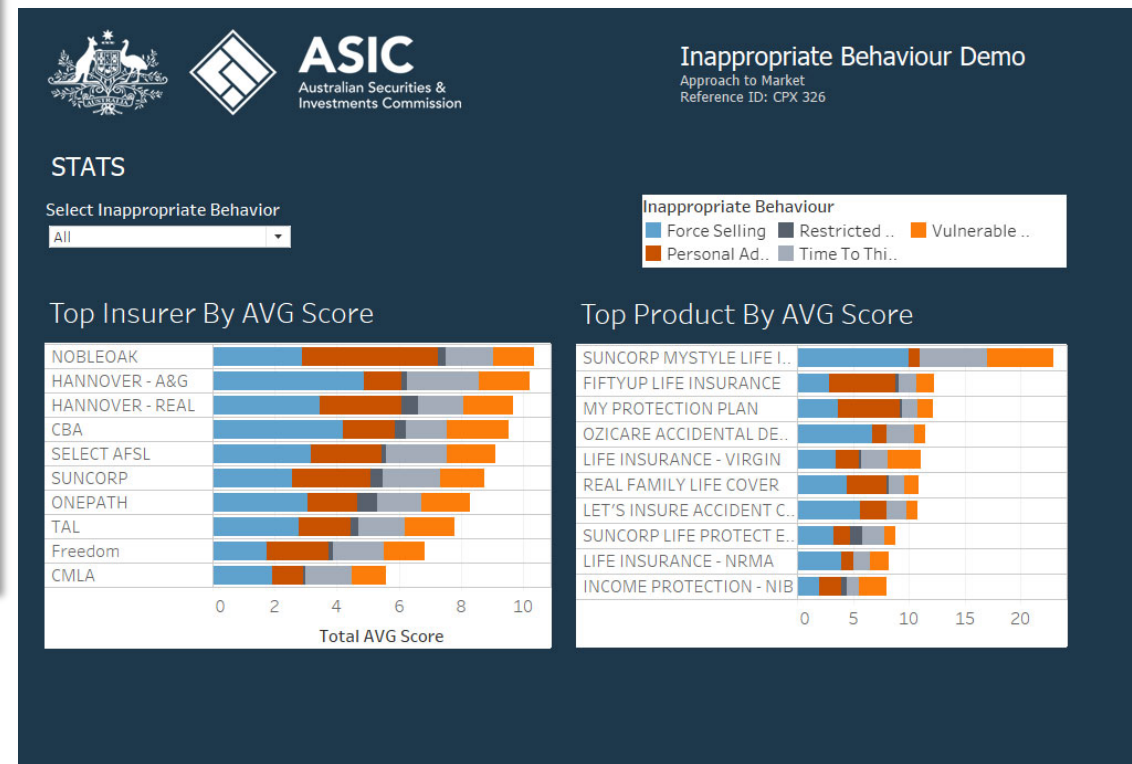
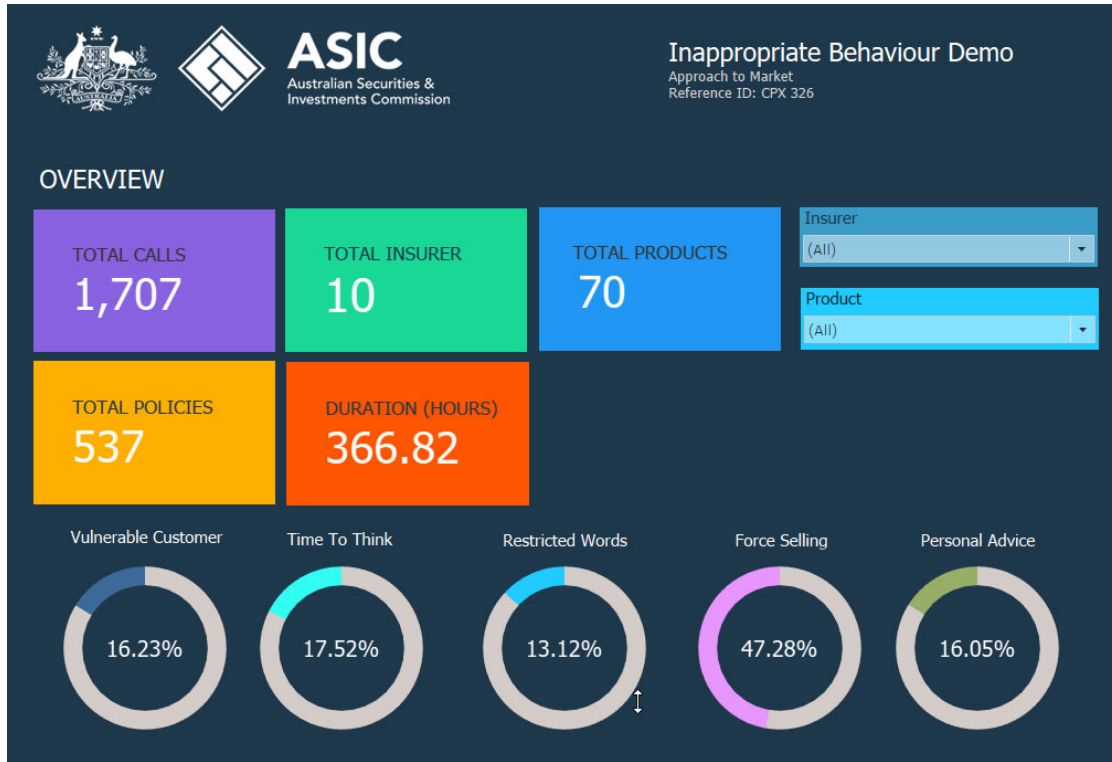


Advanced and common BI tools allow customers to drill down to identify inappropriate behaviour



Findings

Data presented in another popular B.I tool



Findings

Due to the disparate nature of the sample set, the findings are best seen as a continuum, with hits on low quality calls producing more false positives/negatives.

Key dependencies

- Audio quality
- Client involvement to define/profile the behaviour to be detected
- Inclusion of additional metadata



Challenges –specific and general

Reflective of our experience over many years in the Australian Marketplace;

Quality of audio has and will have an impact on the ASIC constituents conversation analytics capability. As discussed, poor audio quality has an impact on transcription accuracy which can impact data accuracy.

- Low quality audio
 - Normally, you compensate low quality with a higher sample size (not available for the mini trial)
- Technology – our platform is engineered to cater for:
 - Noisy background
 - Mobile phone audio
 - Mono (single channel calls) – where both callers are on the same channel
- Low sample size (very low when spread over 10 different insurers) – specific for this mini trial
- No involvement from end client to profile calls - (not available for the mini trial)
- No additional metadata - (not available for the mini trial)

Under the Mini trial umbrella, the impact of not having larger sample sizes, generally poor audio, customer metadata and “client” involvement in the assesment framework build inhibited what we would normally expect to see in terms of outcomes and insights...

Live Example – one of Call Journey’s current engagements applying what ASIC are prescribing in the real world.

Financial Services Organisation...

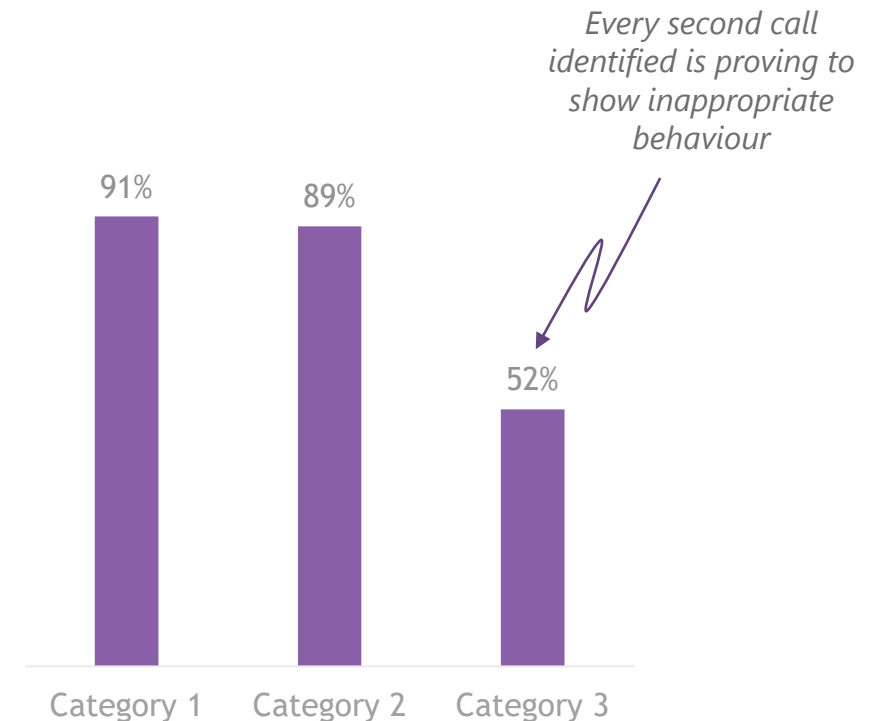
Scope:

- 60,000 calls, 10,000 hours
- 3 month project
- Project Team
 - Data scientist
 - Senior QA staff
 - Head of Operations
- C suite sponsorship
- Call quality:
 - Average (mono, mid range bit rate)
 - Upgrading to dual channel, high bit rate

Task:

- Inappropriate sales technique
 - Failing to disclose certain mandatory items
 - Objection handling
 - Personal advice, opinion & recommendation
 - Restricted words & phrases
 - Forced selling
 - Vulnerable customers
- Privacy
 - Mandatory scripting
 - Customer verification
- Fraud

Preliminary Results:



How Call Journey Can Help ASIC constituents with the ASIC approach

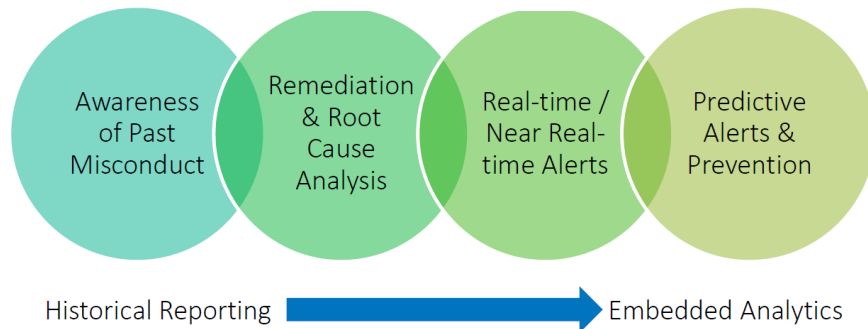
To shift the paradigm toward PROACTIVE PREVENTION

	Current State	Future State
Compliance Risk Coverage	Retrospective Audits React to Complaints	Dynamic, Embedded Checks
Business Mentality	Risk Management as separate function	Built-in Risk Management
Delivery Model	On-site, Point-in-time Auditing	Digital Audit, Real-time Monitoring
Capability Dependency	Audit Expertise	Operational Expertise

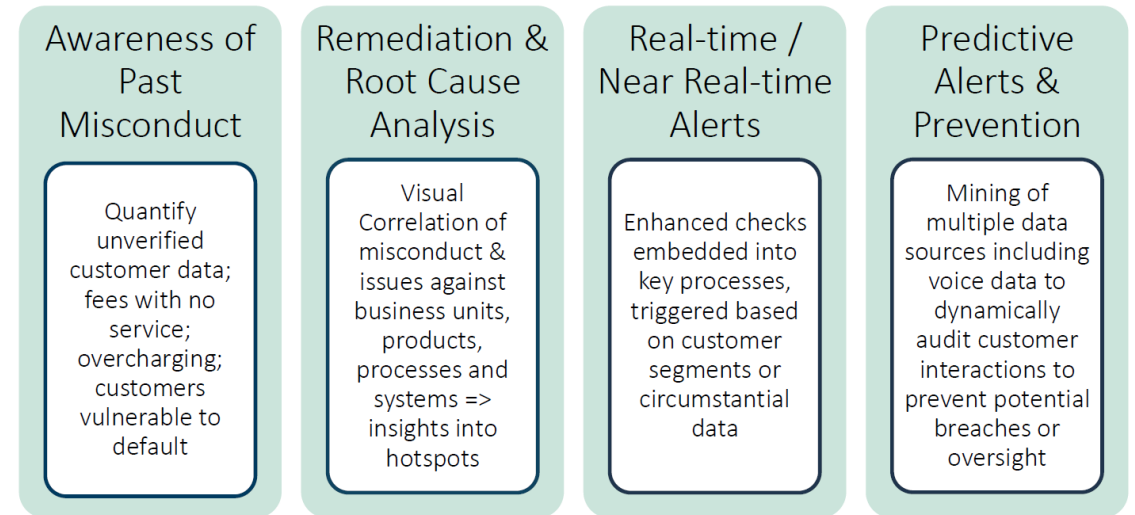
Desired Outcomes:

Strengthened internal systems, with checks-and-balances for detecting, predicting and preventing misconduct, both episodic and systemic
Strengthened demonstration of transparency and traceability to regulators

From Awareness to Proactive Prevention



From Awareness to Proactive Prevention





Call Journey – for ASIC Constituents:

- Will make it simple – plug and play
- Structured Search Algorithms
- Agnostic to Audio technology and BI environments
- Global thought leaders in the Conversation Analytics Industry

Call Journey – for ASIC

- Mature, in-market organisation
- Flexible adoption pathways for constituents
- Option for ASIC to adopt internally and improve coverage (when appropriate)
- Trusted advisor around the Conversation Analytics environment (specialisation)