Uniphore’s Speech Mining and Analytics tool-suite is a next-gen, flexible, scalable and robust enterprise grade solution.

It equips enterprises to easily improve back office productivity as well as manage customer experience, in an integrated fashion.

Its smart, state-of-art features empower organizations to gain deep-insights in call characteristics, enabling them to incorporate performance enhancements, productivity optimizations as well as cross-selling and customer experience improvement measures.

Its flexible architecture enables seamless integration with ERP/CRM systems for superior operational efficiency.
The inability to systematically analyze large amounts of audio data causes massive challenges:

**Poor Quality Control:** Poor customer experience, and inability to analyze trends of Representative misconduct

**Missed Opportunities for Extra Revenue:** Inability to identify relevant Cross-Sell, Up-Sell opportunities on a real-time basis

**Higher risk of fraud:** Inability to identify mis-selling and improper conduct either real-time prohibits meaningful intervention
**Quality Control** refers to enabling a better customer experience, and ability to analyze trends of representative misconduct.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Uniphore’s Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-adherence to standard script</td>
<td>Spot the areas where agent deviated from or did not adhere to script</td>
</tr>
<tr>
<td>Representative’s behavior and/or misconduct</td>
<td>Identify inappropriate words or phrases used in customer interaction</td>
</tr>
<tr>
<td>Agent quality</td>
<td>Based on analysis of calls, conduct training for agents to improve their quality</td>
</tr>
<tr>
<td>Earning the customer’s trust</td>
<td>Monitor calls, spot areas where customer displays negative emotion or dissatisfaction with service, and rectify issues</td>
</tr>
</tbody>
</table>
**Opportunities for Extra Revenue** refer to the ability to identify relevant Cross-Sell, Up-Sell opportunities on a real-time basis.

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<tr>
<td>Cross-sell, Up-sell</td>
<td>Monitor call and spot words uttered by customer that are relevant to potential cross-sell or up-sell opportunities. Once the words are spotted, provide a pop-up on the agent’s screen with details of the product for up-sell or cross-sell.</td>
</tr>
<tr>
<td>Agent performance</td>
<td>Provide report/analytics to Supervisor about agent’s up-sell or cross-sell efforts in customer interactions. e.g. “Do you need”, “Would you like”</td>
</tr>
</tbody>
</table>
**FRAUD RISK CONTROL**

_Fraud Risk Control_ refers to the ability to identify in real-time any mis-selling and improper conduct, and therefore enable instant manual intervention.

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<th>Problem</th>
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<tr>
<td>Operation cost of tracking fraud</td>
<td>Based on keyword spotting for the right words, banks can detect fraud early, and also focus on high-risk transactions instead of having to scan large volumes of calls.</td>
</tr>
<tr>
<td>Mis-selling of a product by agent</td>
<td>Identify red flags based on keywords detected in agent’s conversation and trigger an alert to supervisor.</td>
</tr>
</tbody>
</table>
To get control of tons of audio data, businesses devote extensive funds towards suboptimal solutions:

**Solution 1:**
Transcribe audio data

**Limitations:**
- Long delays between time audio is recorded and time it is transcribed and analyzed
- Extensive time and effort required for transcription

**Solution 2:**
Manual re-listening

**Limitations:**
- Often inaccurate and inconsistent (one review things a customer is satisfied, another doesn’t)
- High level of human resources required

**Solution 3:**
Engage Voice Logger solutions

**Limitations:**
- High CapEx leading to spending in millions of dollars
- Accuracy levels are only at 70 to 75% levels
- ROI can be achieved only in 2 to 3 years
How can enterprises derive systematic, meaningful insights from mass audio recordings?

Is there a faster, more efficient way to get a systematic perspective of my call center?

Can we avoid spending millions in CapEx and achieve ROI in 3 to 6 months?
Uniphore’s Speech Mining Solution analyzes human speech both in real time as well as batch mode to extract useful information about the content. The application identifies particular keywords or phrases, extracts them, and analyses them for critical business insights.
<table>
<thead>
<tr>
<th>Benefits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process Compliance</td>
<td>• Eg: Paraphrasing the customer to get acknowledgement; avoiding negative words or phrases like “cannot do” or “no”</td>
</tr>
<tr>
<td>Regulatory Compliance</td>
<td>• Eg: If the words “bill” and “overcharge” start occurring together often, company can quickly course correct</td>
</tr>
<tr>
<td>Revenue Generation</td>
<td>• Eg: Relevant portfolio products like Insurance, Loans can be identified and sold at the end of every call</td>
</tr>
</tbody>
</table>
Keyword spotting application identifies particular keywords or phrases, extracts them, and analyses them. Speech recognition solutions are currently deployed in 24+ global languages and 1000+ dialects are supported.

Example: Use “I don’t know” as a key phrase to identify crucial knowledge gaps and develop targeted training of the agents.
Transcription lets you capture voice interactions – quickly and accurately! Transcription solutions are currently deployed in 6 languages.

Example: Once you use keyword spotting, you can identify the calls to be further scrutinized but you don’t have to listen to entire audio again. You can just read the transcripts!
Sentiment analysis is the calculation of the overall emotion of text. A sentiment score is assigned, depicting the data's level of negative or positive attitude.

Example: Positive & Negative keywords list can be built. Large amounts of audio data can be taken and segregated (filtered) based on rules. Audio snippets can be statistically polarized to identify the mood of the customers: happy, confused, irate, angry
Audio of Customer-Agent conversation

Uniphore Speech Mining (SM) Platform

- From the input audio file, SM software separate Agent’s utterances
- Agent’s utterances are compared against Scoring Metrics
- Score is assigned for each utterance
- Agent Score Report is generated and shown in preferred output format

Sample Scoring Metrics:
1. Used the standard verbiage: “Namashkar ABC, my name is XYZ, how may I help/assist you?”
2. “Thank you for your patience, my name is XYZ…”
3. …
4. …
### Highlights – Automating Quality Score (MIS)

**Sample Attributes**

<table>
<thead>
<tr>
<th><strong>Sample Sub – Attributes – Scoring to be derived</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Introduction</strong></td>
</tr>
<tr>
<td>Call Opening, Reason for calling</td>
</tr>
<tr>
<td><strong>Gathering Information</strong></td>
</tr>
<tr>
<td>Probing, Paraphrase</td>
</tr>
<tr>
<td><strong>Soft skills &amp; Customer Handling Skills</strong></td>
</tr>
<tr>
<td>Communication Skills/Grammar, Listening, Skills/Comprehension, Professionalism &amp; Courteousness + Empathy, Assurance Statement &amp; Ownership to assist, Confidence+ Tone, Clarity of speech</td>
</tr>
<tr>
<td>Phone etiquette + Personalization, Call Management</td>
</tr>
<tr>
<td><strong>Call Closing</strong></td>
</tr>
<tr>
<td>Closing</td>
</tr>
<tr>
<td><strong>Fatal Accuracy</strong></td>
</tr>
<tr>
<td>Correct and Complete Information (Critical), Data Capturing and Documentation, Summarization, Gross violation</td>
</tr>
</tbody>
</table>
**Business Rules Configurator**

- Configure rules in the rules repository
- Easily mine speech data through customized business rules

- Consider a sample keyword **APR** mentioned in 100 out of 1000 calls.
- The business rules should enable the supervisor or admin to pick out those calls which have words like “Option” or “Dislike” mentioned in those calls before 10 sec from the APR word.
- Further to this among these, the rules should be able to pick out specific keywords said within these calls and so on...
Speech Mining - Architecture

On Premise Model

Audio data is fed from voice logger to client database

Business Insights from Analytics:
- Customer Trust Level
- Agent Performance, Quality and Conduct
- Script Adherence
- Fraud Tracking
- Sales Efforts (Cross-sell, Up-sell)

(1) Voice data from contact centers are fed into the client database
(2) Audio data batches are created for audio mining
(3) Audio data fed into Uniphore's Speech Mining Platform
(4) Speech Mining solution generates report sets and logs
(5) Analytics provide business insights, such as Agent Performance and Conduct, Script Adherence, Fraud Tracking
Audio data is fed from voice logger to client database.

**Business Insights from Analytics:**
- Customer Trust Level
- Agent Performance, Quality and Conduct
- Script Adherence
- Fraud Tracking
- Sales Efforts (Cross-sell, Up-sell)
Speech Mining – Architecture: Real-time
Speech Mining – Architecture: Batch Mode
Acceptable lag in real time transcription: 8-10 seconds
### Value of Uniphore’s SM Solution

<table>
<thead>
<tr>
<th>Feature</th>
<th>Voice Logger based Speech Mining</th>
<th>Uniphore’s SM Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keyword spotting</td>
<td>~ 70 to 75% accuracy</td>
<td>~ 95% accuracy</td>
</tr>
<tr>
<td>Full transcription</td>
<td>Not possible</td>
<td>Possible</td>
</tr>
<tr>
<td>Sentiment analysis</td>
<td>Not available</td>
<td>Available</td>
</tr>
<tr>
<td>Multi-lingual accuracy</td>
<td>~ 50 to 60% accuracy</td>
<td>~ 90 to 95% accuracy</td>
</tr>
<tr>
<td>Custom MIS</td>
<td>Only canned reports</td>
<td>Available</td>
</tr>
<tr>
<td>Deployment model</td>
<td>Batch mode</td>
<td>Real time &amp; Batch mode</td>
</tr>
<tr>
<td>Engagement model</td>
<td>Product sale</td>
<td>Product sales + Managed services</td>
</tr>
<tr>
<td>ROI</td>
<td>High CapEx; ROI is achieved in 2 to 3 years timeframe</td>
<td>Low CapEx; ROI is achieved in 3 to 6 months timeframe</td>
</tr>
<tr>
<td>Example</td>
<td>$2 million capex yielding ROI in 22 months</td>
<td>Pay per hour of audio mined model; ROI in 3 months</td>
</tr>
</tbody>
</table>
About customer: New York (USA) based large American Multinational Financial Services company with global customers

Challenge: As part of USA regulatory procedure, our client was required to produce data of all customer interactions that contain certain phrases. On an average of more than 15,000 to 100,000 hours of audio data per day was generated. To overcome manual processing, our client tried off-the-shelf automation solutions which required millions in CapEx and also failed to provide expected accuracy and desired results.

Uniphore’s Speech Mining Solution: Our customer piloted Uniphore’s Speech mining solution for a period of six month as after the successful pilot, our customer has moved away from pay-per-seat model with the incumbent provider and started leveraging Uniphore’s Speech Mining solution.

Return On Investment:
• Instead of paying $700 per seat for 4000 seats upfront, the customer is only paying for the 10,000 hours of audio mined per day.
• Avoided spending millions in CapEx through Uniphore’s smart OpEx based Managed Services and still achieved 95% accuracy instead of previous 75% accuracy level.
When analyzing stored audio in batch mode, the audio folder is mapped to the AM tool. On the other hand, for real-time analysis, the audio is fed into the SM tool via network tap.

The word list, or grammar, has to be specified by client. This is the exact keywords that need to be spotted in a conversation.

Each segment of the audio analysis is presented as a grid, with the option to listen to a particular segment.

Other features and outputs:

• Confidence score for the spotted words
• Logging of the last-run process
• Keyword search on last-run process

• All past runs (History)
• Past Runs Search
• Custom Analytics (Charts, Graphs, etc.)
auMina - Speech Analytics

Call scoring, and speech analysis drives productivity and cross-selling opportunities
The auMina tool-suite enables business to gain critical insight into calls, and helps put in place performance enhancements, productivity optimizations as well as cross-selling and customer experience improvement measures.

**Quality Scoring and Performance Management**
- Each call is scored based on a set of predefined criteria.
- Based on the call ratings an agent’s performance is measured, and managed.

**Cross-Selling and Customer Experience Management**
- In a live session, auMina provides feedback for cross-selling opportunities.
- Sentiment analysis is conducted on each call, to provide better CX management.
Supervisor/Agent requests for data using filter criteria. Request is sent auMina DB server. 

1. DB server checks for reports in Reports Repository (reports repository is part of the DB server)

2. Results are pulled and sent as outputs to web portal

3. auMina web portal accessed by supervisors and agents

4. auMina Reports repository

Note: Speech mined data in the DB server (required for analytics) is pushed into DB server from Voice Acquisition server. VAS is also polled for Live in-Call Data
Agent Dashboard
Screenshots
**Filter Criteria**: Allows calls search based on time-period, region, category and keywords

**Calls List Grid**: Based on the search criteria, call details are populated in calls list tab in a grid. Quality score against each parameter is shown for every call.
Based on the selected call in Calls list, summary tab is populated with call summary details, voice graph for the call and identified cross-sell opportunities.
Based on selected call, transcript tab is populated with two channel conversation and complete conversation flow.
Based on the selected call in the calls list grid, relevant identified emotions are displayed.

Flag is displayed when an emotion is identified in the call.
Agents list section shows
1. Agents basic details
2. Avg of quality score against
   - Overall score
   - Call Opening
   - Obtaining Reason
   - Probing
   - Professionalism
   - Clarify of Speech
   - Closing

Based on filter criteria, basic agents details are displayed in agents list tab.
Agent wise quality scoring is done for the selected duration and the data is averaged for each quality parameter.
When supervisor clicks on an Agent ID, he is navigated to Agent performance screen with graphical representation of Quality score against a parameter. Weekly, monthly reports can be generated for an agent's selected parameter.
Uniphore’s VQA Capability
An introduction to Voice Quality Analysis
Typical Voice Quality Issues in Contact Centers

Comprehensive Voice Quality Protection

Calls coming to Contact Center are full of impairments. There are solutions!

- **Transmitted Noise**
  Noise picked up and transmitted with speech results in degradation in speech quality, especially when inferior handsets or terminals are used.

- **Adaptive Noise Cancellation (ANC)**
  Detects noise components, then removes them during both speech and pauses via advanced spectral processing techniques.

- **Acoustic Echo**
  A distorted reflection of your own voice.

- **Acoustic Echo Control (AEC)**
  Removes acoustic echo by monitoring and detecting when speech is present.

- **Codec Impairments**
  Use of low bit rate codecs results in overall voice quality degradation in both clean and noisy speech conditions.

- **Enhanced Voice Intelligibility (EVI)**
  Enhances key speech formants responsible for recognition of words.

- **Level Imbalances**
  Callers shouting from loud areas, and improper network level adjustments can result in speech levels which are too high or too low for optimum listening.

- **Automatic Level Control (ALC)**
  Dynamically applies gain or attenuation to incoming signal levels; supports a wide range of adjustment algorithms and configuration options.

**Impact is longer call durations and poor Customer Experience**
Example of Adaptive Noise Cancellation – Traffic Noise

Before VQA

Background Noise present throughout the call

After VQA

Background Noise is removed
Example of Hybrid Echo

Echo present throughout the call

Before VQA

Echo is removed from call

After VQA
Example of Acoustic Echo Control (AEC)

Before VQA: Echo present throughout the call

After VQA: Echo is removed from call
VQA will immediately provide a value proposition for contact centers that result in more effective and efficient customer interactions enhancing agent efficiency and productivity.

Reduction in miscommunications caused by voice quality impairments will result in the following:

- **Reduction in Average Call Handling Time (ACHT)**
- **Increase in agent call handling productivity**
- **Decrease in agent fatigue attributed to auditory filtering and perception**
- **Reduction in IVR false detections related to the presence of loud ambient noise or echo on a call**
- **Consistent customer interaction efficacy regardless of the location of an inbound caller**
- **Increase in Average Calls Answered (ACA) per agent**
- **Reduction in per call cost**
VQA solution for TDM - E120

E120 Platform Options

- Standalone Applications: 4sa Shelf (Enterprise Shelf)
- High-Density Applications: 80sa Shelf (Carrier High Density Shelf)

80sa High-density

- 20 QVP cards, 80 E1/T1s max per shelf
- 4 BNC shelves max per 2200 mm rack
- 6 Wire Wrap shelves maximum per 2200 mm rack
- Mounts for 19”/23” ANSI/EIA, 600 mm ETSI racks

4sa Shelf

- 1 QVP card, 4 E1/T1s maximum per shelf
- Mounts for 19” or 23” ANSI/EIA racks
- Rubber feet for tabletop mounting
The Ethernet Voice Processor (EVP) measures and repairs voice quality problems in real-time, on every phone call, in both directions.

The EVP solution allows VQA to be deployed “in-line” on any IP network.

- GigE line-rate performance
- No signaling or provisioning required
- Support for all CODECs used
- Transparent IP operation
- Sub-second protection switching
- Two deployment options

Up to 1000 sessions & up to 21,000 sessions
Customer Profile

This customer provides contact center services for inbound billing and support resolution. Their primary objective was to reduce total per-minute call costs, while maintaining a high standard of customer service.

Statistics
> 200 agent seats
> 306s Average Call Handle Time
> PSTN connectivity via 8 E1 PRIs

Current Optimization Strategy
> Quality monitoring and workforce management
> Advanced Metrics Reporting & real-time analytics
> Constant process improvement
Solution Profile

Two VQA E120 platforms were installed to cover all 8 E1 PRIs. Installation was completed in a single night, and required no re-configuration of the incumbent equipment.

> Cutover was completed in one hour during a maintenance window
> The VQA proof trial ran for a total of seven weeks after the initial cutover
Results Profile

Average Call Handle Time was reduced by over 10% with the improved communications efficiencies enabled by VQA.

Statistics

> Average Call Handle Time reduced to 271s
> ROI reached in 4 months
Process of Trialing VQA for Contact Center

Monitor ACHT Reduction For Designated Contact Center Queues
Thank You!

For more information, contact us at info@uniphore.com