AUTOMATE EDISCOVERY AND GRAIN INSIGHTS WITH TRANSCRIPTION TECHNOLOGY

NICE Compliance
• Housekeeping
• Legacy Challenges with Communication Compliance
• Understanding The Basics of Transcription
• Advanced Technology Best Practices
• The NICE Transcription Solution and Demo
• Question and Answer
Today’s speakers

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Webinar Series: Transforming Communication Compliance

For more information on today’s topic please also visit: www.nice.com/compliance
Legacy Challenges with Communication Compliance
Expanding Regulations Drive Surveillance Demand

Dodd-Frank
U.S. Legislation for Swaps
- Record Keeping (Recording)
- Trade Reconstruction
2013

MiFID II
European Directive
- Surveillance in Place to Detect Market Abuse
- Record Keeping (Recording)
- Trade Reconstruction
2018

MAR
European Directive
- Detecting Market Abuse
- Detect and Prove Intent Even if Unsuccessful
2016

APAC
- China to create its version of MiFID II
- Hong Kong expects Authorized Institutions to adopt a holistic framework
2018

Regulation Best Interest
a new standard of conduct for US broker-dealers when recommending securities to retail customers
July 2020

SM&CR
a new standard of conduct for UK financial institution's employee governance guidelines including seniors managers and others
Dec 2019

FX Code of Conduct
Global Guidance
- Protect Confidential Information
- Complete, Accurate Data
- Measure and Monitor (updated in) 2016
What Firms Need with Communication Compliance

**SHARE**
Export interactions in a standard format During internal and external investigations

**HOLD**
Protect interactions from being deleted / changed during investigation

**PROVE**
Understand how many interactions are expected, confirm the number recorded, ratify which regulated user created the content, ensure quality, retention & stored successfully

**PROVISION**
Automatically manage adds, moves and changes

**APPLY POLICY**
Apply regulatory policy retention rules and mark operation for future auditing

**CAPTURE & ARCHIVE**
Capture all interactions under regulatory scope and enable follow up searches and future retention changes

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## Common Communication Compliance Challenges

<table>
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<tr>
<th>Challenge</th>
<th>Description</th>
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<tr>
<td>Reduce compliance recording TCO</td>
<td>Missing calls and not knowing it</td>
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<tr>
<td>Bank is requiring applications move to the cloud</td>
<td>Transcripts of calls are time consuming and costly to retrieve</td>
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<td>Creating large reproductions of audio/data files within limited timeframe provided by regulators</td>
<td>Lack of centralized administration, and reporting and auditability required by regulators</td>
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<td>Manual checks to confirm recording system is working</td>
<td>No automation to reduce manual activities and errors</td>
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Understanding The Basics of Transcription
What is Voice Transcription?

**Voice Recordings**

Voice Recordings are extracted from the recording system.

**Voice Transcription**

The voice recordings are transcribed to text using Natural Language Processing (NLP).

**Text Output**

The output text files contain a full transcription of the voice call.
Why is Voice Transcription Needed?

Legal Investigations
As the size and scope of regulatory requests increases, the time regulators give to produce information has decreased requiring financial institutions to spend more to comply

Efficiency Challenges
Include slow manual process to locate the data, expensive transcription services to convert the data, and manual third party review to understand the data, all contributing to delays and the risk of not understanding the context of the data being produced

Reducing Manual Tasks
by automating the eDiscovery task so the speed of the process of producing data is increased at lower costs

Business Intelligence
By leveraging the high quality transcription to find and leverage best practices across the enterprise
Where Can Transcription Be Applied?

- Automate manual transcription
- Transcribe the calls for internal review
- Search and navigate transcribed calls for keywords
- Reconstruct the trade conversation timeline
- Package transcriptions and audio files for external parties
- Identify and separate speakers, internal and external
- Transcribe multilingual conversations
## The Benefits of Voice Transcription

<table>
<thead>
<tr>
<th>Decreases Investigation Time</th>
<th>Improves Efficiency</th>
<th>Lower Costs</th>
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<tr>
<td>• Fast response to legal investigation and regulatory inquiries by providing transcripts of the audio calls as part of the case</td>
<td>• Search words and phrases within the transcribed voice calls as part of an eDiscovery process</td>
<td>• Eliminate third party costs - transcription services and outside counsel review</td>
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</table>
Key Technology Aspects of Transcription
Accurate Automated Speech Recognition (ASR)

What is it?
- Automated Speech Recognition (ASR) consists of linguistic models that enable converting spoken language into text

Why use ASR?
- Provides a single query interface across all communication channels
- Allows for easily using synonym dictionaries to increase recall of relevant recordings
- In combination with contextual queries improves result accuracy
**Transcription Principle**

- **Transcription Service approach**
  - Automated Speech Recognition (ASR) consists of linguistic models that enable converting spoken language into text.
  - Uses new kind of text algorithms to search Word Alternates from ASR Results.

- **Transcription Workflow**
  - Dictionary and natural language models are created and tuned for each customer.
  - Audio converted into text at a rate of 5-15x real time.
  - N-Level Text is created and output.

Whiteboard: 1. **DICTIONARY**
2. **NATURAL LANGUAGE MODEL**

Audio flow:
- **AUDI0**
- **PROCESSING**
- **DICTIONARY TRANSCRIPT**
- **APPLY DOMAIN MODEL**
- **OUTPUT N-LEVEL WORD PROBABILITY**
- **SMART INDEX**

"no one will catch me"
• Reduction false positives by applying analytics to relevant languages
• Language ID support for multiple languages simultaneously simplifying the configuration for Speech Conversion
1. Language Identification Models learn how languages sound and can predict the most likely language used.

2. Phonetic Models learn the way sounds are pronounced for a given language and break audio to phonemes.

3. Language Packs map the sounds to words.

4. Phrase Packs predict the most probable words and phrases.
Improved Accuracy with NICE Nexidia Speech Analytics Engine

Accuracy is primarily based on the Number of **Phonemes** the Terms and Phrase has.

Factors in trading environment influencing the accuracy are:
- Quality of the audio
- Accent
- Volume
- Speed of talk
- Cross talk
- Background noise
- Mic Quality
- Mono vs. Stereo Audio

Example:
North American English, Search Phrase with 15 phonemes

85% of the true occurrences will be found.
In order to increase the transcription accuracy, with the goal of achieving a 70% or greater requirements, we use a Phrase Pack Training process based on Machine Learning:

- Learns common phrases to improve the output of the speech analytics
- Utilizes related written content to learn domain specific common phrases used by the recorded population to improve transcription results
- Simplified Iterative Process that optimizes the output of the transcription using sample audio and text

Narrative Analysis

Audio, Chat, Email, etc.

NEURAL PHONETIC SPEECH ANALYTICS ENGINE AND SEARCH GRID

Model Generation and Update

Model Applied to Audio

Customer-specific Neural-Acoustic Model

Quantitative Results

TEXT

RELIABLE AND ACCURATE TRANSCRIPTIONS

MODELING TOOLS
NICE Solution
Deep Dive
The Industry's Most Unified and Intelligent Compliance Platform

**NTR-X COMMUNICATION COMPLIANCE**
- Communication Recording
- Compliance Assurance
- Transcription Services

**SURVEIL-X HOLISTIC SURVEILLANCE**
- Communication Surveillance
- Market Surveillance
- Sales Practices & Suitability

**MACHINE LEARNING**
- NLP
- Integration Hub
- Self-Development
- Automation
- Security

**CASE MANAGEMENT**
COMPASS Transcription Solutions

COMPASS Export Transcription
Option with the COMPASS Bulk Export module to transcribe the calls as part of the export process.

COMPASS Transcription SDK
Transcription service that can be integrated via API with a customer’s or partner’s applications.

COMPASS Discovery
Separate COMPASS module for transcription of all audio files, with the ability to search on the file content.
NICE COMPASS Export Transcription

Key Features
• Bulk download provides a secure, auditable solution
• 1.7 million calls can be downloaded per day on a single extraction server
• Downloads in the background to allow continued working
• Provides a transcription file for each call processed
• Listen to audio that matches queries

Key Benefits
• Provide all trade conversations quickly and efficiently
• Simplify intensive compliance investigation processes
• Leverage existing infrastructure and business systems
• Multi-lingual support built for financial services

Current Downloads Progress
Select Users and/or Groups, create Start and End Date and trigger operation
Transcription files will be stored in the same package as the audio files providing a complete list of each wav file, and metadata
NICE COMPASS SDK

Key Features
- Standard API to receive audio file input, transcribe and output to predetermined destination
- Use input from any recorder (recorder agnostic)
- Integration into limitless number of applications
- Available with development toolkit

Key Benefits
- Provide ALL trade conversations quickly and efficiently
- Simplify intensive compliance investigation processes
- Leverage existing infrastructure and business systems
- Multi-lingual support built for Financial Services

Users can use the sample transcription engine to transcribe audio files from any system
NICE COMPASS Discovery

Key Features
• Ability to search words and phrases
• Ability to narrow down with facets
• Provides a transcription for each call processed
• Ability to Download

Key Benefits
• Easily search words and phrases
• Automatically mark the section of the call where the word is spoken
• Find the correct calls as part of an eDiscovery process
COMPASS Transcription Flow
How to deploy COMPASS Transcription

On Premise

- Deployed seamlessly onsite within your current NICE COMPASS framework
- The audio automatically processed via an onsite transcription service as part of Data Extraction Job
- COMPASS Bulk download extracts the audio and includes transcription in the export package
- Firms log into the NICE COMPASS Discovery Application and can search transcription results

Cloud Offering

- Fully managed service using secure AWS services
- NICE COMPASS Bulk download extracts the audio and delivers audio to cloud transcription services
- Firms log into the NICE COMPASS Discovery Application in the cloud and can search transcription results
FIRST:

LANGUAGE MODEL TRAINING
Process of Language Model Improvements

**Call Download / Selection**
- 100 hours of handset audio in the relevant language
- Statistical dialect representation of the trading floor and form minimum 50 traders
- Best practices to select audio data from a 2 week window
- Files to be downloaded in a WAV format

**Secure Handover**
- NICE & Customer signs a NDA and Data Protection Agreement
- Customer hands over data to NICE though agreed secure channel
- Data stored on secured NICE servers (only registered persons have access)
- Data securely deleted from NICE servers after usage (under Customers supervision)

**Transcription (Manual)**
- All calls that are handed over needs to be manually transcribed and tagged with events (see transcription method documentation)
- Transcription of these calls happens under strict supervision of NICE by transcription provider (option to replace by customer certified provider)
- Transcription is checked to achieve 99% quality.

**Model Training**
- After transcription is finished then the NICE Language Model team take the audio data and transcription data (leaving 10% for control testing)
- The data is feed into a learning machine that scans the two sources and creates an acoustic model (if needed) and a language model (including a dictionary and NNLP packs)

**Model Tuning**
- Based on the results of the testing the model can be further tuned, if the expected results have not been reached
- Acoustic and language models can be tuned manually or additional data sets can be used

**Deployment**
- When the required quality has been reached the models are ready for deployment
SECOND:

PHRASE PACK TRAINING
Phrase Pack Training Overview

Twinkle Twinkle Little Star
Analyze manually transcribed training data to improve probability scores and identify new words.

1. Manual Transcription
2. Update Default Phrase Pack using Text
3. Add New Word Pronunciation
4. Deploy and Test Model and Analyze Calls
EXAMPLE:

TRAINING A NEW WORD
New word: “Coronavirus”

Speaker #1:
- Good morning John, this coronavirus crisis is impressive. We need to make sure we are securing our positions. Global markets are plunging after the implosion of an alliance between OPEC and Russia, it caused the worst one-day crash in crude prices in nearly 30 years!

Speaker #2:
- Absolutely! Also this coronavirus pandemic is brutal upon the retail industries… However I have noticed that the technology companies are doing great short term with the remote working situation. We also need to bet on airlines next, with all the governments’ investments to protect that industry it will come back up.
Phrase Pack Training demo script
THIRD:

ADJUST SETTINGS
Voice Surveillance Objective

Optimize the recall rate of Relevant Review Items while taking into consideration the precision.

- Find relevant interactions
- False positive alerts increase the workload
DEMO
## Why NICE for Transcription

### NICE Transcription Capabilities for Financial Services

<table>
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<tr>
<th>Flexible Transcription Options</th>
<th>Highest Transcription Accuracy</th>
<th>Automated Processes</th>
<th>Lower Total Costs</th>
<th>Reduced Risk</th>
</tr>
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<td>Multiple options available to ensure limited change to business processes</td>
<td>Transcription accuracy of 70%+ – highest in the industry – leverages machine learning and NLP advanced analytics</td>
<td>Reduces efforts needed to transcribe conversations as part of the investigation process</td>
<td>Eliminate third party costs - transcription services and outside counsel review</td>
<td>Quickly export and transcribe communications ensuring regulatory deadlines or business requirements are met</td>
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Q&A
### Transforming Communication Compliance Webinar Series

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<td>March 19</td>
<td>Best Practices in Unified Communications Recording</td>
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<tr>
<td>April 15</td>
<td>Unlocking the Potential of Cloud Compliance Recording</td>
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<tr>
<td>May 14</td>
<td>Automate eDiscovery and Gain insights with Transcription Technology</td>
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<tr>
<td>June 11</td>
<td>Maximize Uptime and Lower TCO with Managed Services</td>
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Thank You

www.nice.com/compliance