The Case for

Data Normalisation in Voice Recording Systems

kerv Collaboration & Compliance

Optimising Voice Data Architecture for Regulatory Readiness, Auditability and Operational Control in Financial Services.

Overview

In global financial services, voice recording is a regulatory necessity—mandated by regimes such as MiFID II, FCA, SEC,FINRA, Dodd-Frank, and MAS.

Yet, many firms face persistent challenges with fragmented, unstructured, and inconsistent voice metadata that undermine auditability, operational integrity, and compliance assurance.

This paper explains how data normalisation - a structured data modelling approach, helps financial institutions overcome these challenges by improving traceability, regulatory alignment, system performance, and data integrity across the voice data lifecycle.

Voice Data: A Core Compliance Asset

For Operations and Compliance leaders in financial institutions, voice data is more than just captured audio—it is a critical compliance asset. Without consistent metadata structures (e.g., speaker identity, device used, session context), firms risk:

- Missing or invalid metadata
- Redundant or orphaned files
- Inability to locate recordings under audit
- Failed retention or deletion policies
- Non-compliance with regional data regulations

Many of these risks stem from outdated or flat file storage models that lack relational integrity. A move towards data normalisation significantly reduces these risks.

What Is Data Normalisation in Voice Compliance Systems?

Data Normalisation is a method of structuring and organising metadata within relational databases, so each entity (e.g., speaker, session, device) is stored independently and logically linked via relationships.

A properly normalised schema:

Eliminates redundant metadata entries

Maintains clean, scalable relationships

Ensures referential integrity across all voice recordings

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This structured foundation improves every compliance and operational process relying on voice data—especially across Teams voice recording, mobile capture, and regulated messaging platforms.

Key Benefits for Financial Institutions

To meet evolving global regulatory expectations, financial institutions must ensure their voice compliance systems are structured, scalable, and audit-ready.

Data normalisation delivers measurable benefits across compliance, operations, and risk—creating a resilient foundation for long-term regulatory alignment.

These include:

Consistent Metadata, No Redundancy

By centralising metadata (e.g., speaker identity, device type), normalisation removes duplication across voice recordings, reducing storage load and administrative effort.

Complete Audit Trails

Relational integrity allows each recording to be linked to its origin (device, user, time), supporting compliance teams with reliable, tamper-proof audit logs.

Enhanced Assurance for Voice Recording

Normalised schemas support hash-based file verification, structured logging, and origin tracking—vital for proving completeness under FCA or MiFID II audits.

Faster Search and Retrieval

Operations teams can execute highly specific queries—e.g., all calls from a specific speaker or device version—quickly and efficiently.

Streamlined Retention and Deletion

Normalised databases simplify compliance with GDPR, FINRA, and regional rules by applying policies across centralised metadata (e.g., deletion by role or jurisdiction).

Ready for AI, Transcription and Analytics

A structured schema supports multiple transcripts, tags, segments, and annotations—enabling better insights, risk scoring, and automation through AI and surveillance tools.

Problems solved by Data Normalisation

Problem	Normalisation Solution
Duplicate metadata	Central tables for speaker, session, device info
Inconsistent records	Enforced rules and lookups
Missing audit links	Use of foreign keys and referential constraints
Lack of audit trails	Normalise logs, actions, and timestamps per entity
Poor scalability	Decouple growing entities like transcripts and segments
Regulatory risk	Centralise and enforce retention and anonymisation rules.

Normalised Schema Overview

Key Entities:

- Speakers – ID, name, role, region
- Devices – ID, model, OS version
- Sessions – Start/end time, project, location
- Recordings – Audio file, hash, session/speaker/device links
- Transcripts – Source (manual/AI), language, text, confidence
- Segments & Labels – Timestamped phrases, metadata, tags
- Retention Policies – Mapped by region, channel, risk profile

This architecture can be implemented in hybrid systems using SQL + object storage (e.g., PostgreSQL and S3), supporting enterprise-scale deployments in financial environments.

Best Practices for Implementation

- Store audio in encrypted object storage, referenced via URL and hashes
- Use UUIDs or hashes to ensure global uniqueness across distributed systems
- Apply role-based access controls for sensitive metadata
- Enable versioning on transcripts and annotations
- Deploy ETL pipelines to feed analytics or surveillance platforms

A Compliance Imperative

For global financial institutions, data normalisation is not just a technical choice—it's a strategic compliance advantage.

It enables:

Consistent, auditable voice data across Teams, mobile, and trading platforms

Faster response to regulatory audits and data requests

Lower risk of metadata failure or governance gaps

Greater readiness for AI, eDiscovery, and advanced analytics

Firms that normalise their voice compliance architecture today are better equipped for the increasing demands of regulatory scrutiny tomorrow.

Next-Gen Voice Compliance for Global Financial Firms

As voice recording regulations become more complex, globally enforced, and technology-driven, financial institutions must evolve their data strategies to stay compliant and competitive. Data normalisation offers a foundational shift—delivering consistent, auditable, and scalable voice metadata that supports faster audits, stronger governance, and seamless integration with AI and analytics platforms.

Whether you're navigating MiFID II, FCA SYSC 10A, Dodd-Frank, or global privacy laws, normalising your voice data architecture is essential for audit readiness, operational resilience, and regulatory alignment across markets.

Get ahead and stay ahead with Kerv

Looking to normalise your voice recording data environment?

Get in touch with Kerv today to discover how we help leading financial institutions build modern, compliant, and future-ready voice recording systems that meet evolving global data regulations.

This paper is one of four that aims to explore the evolution of voice regulations and how voice recording technologies have adapted to keep Financial Institutions compliant and fully prepared when the auditors require evidence of this.

Visit our website or click on the links below to download the others in this series:

- The Case for Separating Capture and Assurance
- The Future of Voice Technology in Financial Services: A 5-Year Outlook Amid Regulatory Evolution
- The Future of Voice Recording Regulations in Financial Services

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