EchoDepth
for Financial Services

Emotional Intelligence for FCA-Regulated Firms

How real-time vulnerability detection, complaint escalation prediction and emotional risk assessment help UK financial services firms meet FCA Consumer Duty obligations — with documented evidence.

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FCA Regulatory Sandbox participant · ISO 9001 · Cyber Essentials
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1. The Compliance Gap

UK financial services firms face a structural problem: the tools designed to detect customer vulnerability and emotional distress do not work. Traditional sentiment analysis reads words. It cannot read the person.

When a customer in genuine financial distress calls about a debt recovery notice, keyword-based systems may flag the word 'upset' — but miss the trembling voice, the sustained silence, the involuntary facial tension that signals a person on the edge of crisis. By the time a compliance team reviews the case, the harm has already occurred.

£176M	£479M	1.85M
FCA fines issued in 2024 (up 230% YoY)	Customer redress paid by UK firms in 2024	Complaints received in H1 2025 alone

Sources: FCA 2024 Fines (fca.org.uk/news/news-stories/2024-fines), FCA Complaints Data (fca.org.uk/data/complaints-data), FCA Aggregate Complaints Data 2025 H1.

The FCA Consumer Duty (effective July 2023) requires firms to identify vulnerable customers, take appropriate action to avoid foreseeable harm, and document that vulnerability was considered in consequential decisions. Most firms cannot do this at scale — because their tools cannot detect what they cannot see.

EchoDepth was built to close this gap.

2. What EchoDepth Is (and Is Not)

EchoDepth is a real-time emotional intelligence platform for FCA-regulated firms. It analyses facial expressions, voice patterns, images and text to score emotional state across three dimensions — Valence (positive/negative), Arousal (calm/activated) and Dominance (in-control/vulnerable) — producing structured, timestamped data that compliance teams can use as evidence.

What EchoDepth does:

- Detects vulnerability and emotional distress in real time during customer interactions
- Predicts which complaints will escalate to the FCA before they leave the organisation
- Flags emotional risk before consequential decisions (loan declines, account closures, debt recovery)
- Creates timestamped audit trails documenting that emotional risk was assessed — for FCA Consumer Duty
- Supports voice-first vulnerability detection for phone-based collections and complaint calls

What EchoDepth is not:

- It is not a lie detector. It does not claim to detect deception.

- It does not make automated decisions. All outputs are advisory — a qualified human must review and act.
- It does not store biometric data. Video is processed in memory and immediately discarded.
- It is not surveillance. It operates in consented, time-bound, decision-specific contexts.

3. How It Works

Facial Action Coding System (FACS)

EchoDepth's core analysis is built on FACS — the Facial Action Coding System developed by Paul Ekman and Wallace Friesen. FACS decomposes every visible facial movement into 44 discrete, numbered Action Units (AUs). Because many AUs are involuntary, they provide an emotional signal independent of self-report and resistant to deliberate manipulation.

EchoDepth tracks all 44 AUs per frame in real time, scoring each on a continuous 0.0–1.0 intensity scale. Temporal coherence is scored across the full session — measuring emotional trajectories, not snapshots.

VAD Scoring Model

AU activations are mapped to three continuous emotional dimensions:

Dimension	Range	Low	High	Fintech relevance
Valence	0.0–1.0	Distress, anxiety	Comfort, ease	Drop during specific questions indicates discomfort
Arousal	0.0–1.0	Calm	High activation	Sustained high arousal correlates with cognitive load
Dominance	0.0–1.0	Vulnerable, powerless	In control	Sudden drop indicates encounter with unexpected information

Four Modalities

EchoDepth combines four input modalities, adapting to the interaction format:

- **Video / Facial** — 44-AU FACS analysis at up to 30fps. Primary modality for video calls and recorded interviews.
- **Voice / Prosody** — Pitch, rate, energy and micro-pause analysis. Primary modality for phone-based vulnerability detection, where most collections and complaint interactions occur.
- **Image / Still Frame** — Single-frame AU analysis for document verification, ID checks, or post-session review of captured stills.
- **Text / Linguistic** — Sentiment, hedging, temporal inconsistency and confidence markers in transcribed speech or written correspondence.

4. Use Cases in Financial Services

Complaint Escalation Prediction [Compliance]

Detects sustained frustration, distress and powerlessness during customer interactions. Alerts staff in real time, enabling documented intervention before a complaint reaches the FCA.

Loan Decision Emotional Risk [Lending]

Monitors emotional state during video affordability interviews. Flags extreme distress before decline decisions are communicated. Routes to vulnerability-trained staff.

Debt Collections Vulnerability Detection [Collections]

Voice-first vulnerability detection during phone-based debt recovery. Tier-classifies vulnerability (standard, elevated, financial distress, crisis). Triggers appropriate treatment protocols.

Fraud Investigation Support [Fraud]

Adds physiological evidence to investigation interviews — detecting inconsistency between emotional baseline and responses to specific questions. Not lie detection: measures physiological divergence.

Insurance Claims Analysis [Insurance]

Behavioural intelligence layer for video claims interviews. Detects cognitive inconsistency markers. Post-session report with timestamped anomalies for case file.

KYC / AML Interview Support [Compliance]

Emotional intelligence overlay for video KYC platforms. Post-interview behavioural summary. Configurable referral thresholds. Full audit trail.

5. FCA Consumer Duty Alignment

FCA Consumer Duty (effective July 2023) creates three obligations that EchoDepth directly addresses:

FCA Requirement	EchoDepth Capability
Identify vulnerable customers	Real-time vulnerability detection across voice, video, image and text interactions
Take appropriate action to avoid foreseeable harm	Pre-decision flags trigger intervention protocols before harm occurs
Document that vulnerability was considered	Timestamped audit trails with VAD scores, alert history and session reports

6. The ROI Case

The following ROI model is based on a UK bank handling 50,000 vulnerable customer cases per year. These are modelled projections, not guaranteed outcomes. Actual results will vary by organisation.

Parameter	Value
Baseline vulnerable cases / year	50,000
Escalation reduction	25%
Vulnerability detection improvement	15%
Modelled annual savings	£467,000
Proof of concept cost	£50,000
Year one ROI	3.1×

The model excludes secondary benefits: reduced FCA scrutiny, avoided fines, reputational protection and reduced staff turnover in complaint-handling teams. Full methodology: echodepthfintec.com/methodology.html

7. Responsible AI Commitments

• **No lie detection claims** — EchoDepth does not claim to detect deception. This is non-negotiable in all deployments.

• **Human review required** — No automated decision affecting an individual may be made solely on EchoDepth data. A qualified human must review and act.

• **Cultural bias actively addressed** — Training across 6 countries and 14 cultural cohorts is a bias mitigation strategy. Cavefish will not deploy EchoDepth where demographic bias could cause discriminatory outcomes.

• **Privacy by design** — No raw video retained. No biometric data stored. GDPR compliance is structural, not procedural.

• **Consent and transparency** — EchoDepth operates in consented, time-bound, decision-specific contexts. Not employee surveillance.

8. Getting Started

Three steps to evaluate EchoDepth:

1. **Discovery call (30 minutes)** — We explore your use case, constraints, and what a proof of concept would look like in your environment.

2. **Live demo or API sandbox** — See EchoDepth with your own video inputs, or receive sandbox API credentials to test integration directly.

3. **Proof of concept (from £50,000)** — Structured PoC with your data, your workflows, your compliance requirements. Full ROI analysis included.

Plan	Price	Includes
Sandbox	Free	500 session mins/month, REST + WebSocket, watermarked
Professional	£999/month + VAT	Unlimited sessions, full reports, webhooks, professional services
Enterprise	Custom	Volume pricing, on-premise, SLA, custom alert models

Contact: hello@cavefish.co.uk · echodepthfintec.com · Book a call: echodepthfintec.com/contact.html

This document is provided for informational purposes. ROI figures are modelled projections and not guaranteed outcomes. EchoDepth does not claim to detect lies or deception. All statistics are sourced from the FCA or internal modelling — see echodepthfintec.com/methodology.html for full source citations. © 2026 Cavefish Ltd. Registered in England & Wales (15127122). Cardiff, Wales, UK.