White Paper: The EARO Framework—A Holistic Model for Measuring Marketing Effectiveness in the Age of Agentic AI

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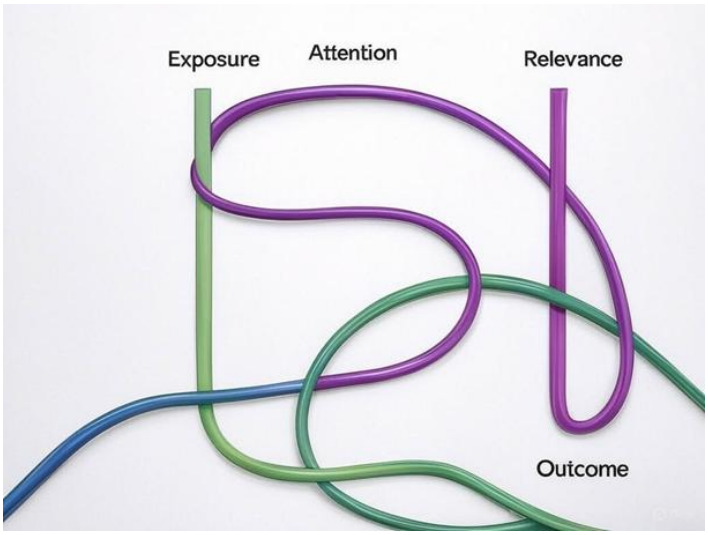
Abstract



The marketing landscape is undergoing a profound transformation with the rise of artificial general intelligence (AGI) and contextual agentic AI, necessitating advanced frameworks to evaluate campaign effectiveness beyond traditional attention metrics. Drawing on cognitive science principles, particularly Dr. John Vervaeke's theories of relevance realization and collective intelligence, this white paper introduces the EARO framework (Exposure → Attention → Relevance → Outcome, pronounced "Hero"). The EARO framework incorporates 22 measurable metrics across four components to capture the full spectrum of campaign dynamics, from initial exposure to long-term brand attachment. It explicitly models the Exposure → Attention → Emotion chain, addressing not just *what* impact campaigns have but *why* those impacts occur, aligning with insights from the author's experience at Omnicom Hearts & Science on Brand Attachment studies. Through mathematical formulations, statistical analysis, and two marketing examples, this paper demonstrates the EARO framework's superiority over attention-only frameworks, targeting advanced audiences leveraging contextual agentic AI, as explored in the author's LinkedIn post, *Contextual 3.0 - How Context Agents Are Transforming Media Planning*.

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1. Introduction

The convergence of artificial general intelligence (AGI) and contextual agentic AI is redefining marketing, enabling campaigns that dynamically adapt to real-time cultural and emotional signals. As discussed in the author's opinion piece, *Navigating AGI's Next Frontier: Relevance Realization, Collective Intelligence, and the Future of Marketing*, AGI leverages relevance realization—the cognitive process of filtering for what matters—and collective intelligence to enhance campaign outcomes. Similarly, the author's LinkedIn post, *Contextual 3.0 - How Context Agents Are Transforming Media Planning*, highlights how context agents interpret contextual data (e.g., user sentiment, trending topics) to optimize media planning, ensuring hyper-relevant ad placements.

Traditional metrics like impressions, view-through rates (VTR), and click-through rates (CTR) focus on *what* impact campaigns have but fail to address *why* those impacts occur—a critical gap noted during the author's tenure at Omnicom Hearts & Science, where Brand Attachment studies revealed strong correlations ($r>0.6$) between Media Mindset Scores (MMS), Attention, and long-term emotional bonds (Ad Age, 2019). To address this, the EARO framework (Exposure → Attention → Relevance → Outcome) is proposed as a comprehensive, data-driven model. With 22 metrics across four components, EARO incorporates the Exposure → Attention → Emotion chain, aligns with classic marketing methodologies like AIDA (Attention, Interest, Desire, Action), and integrates Brand Attachment as a key outcome, providing a holistic tool for advanced marketers.

Marketing's obsession with attention metrics is no longer sufficient. In an era of ambient AI, contextual agents, and privacy-first ecosystems, the signal of attention alone fails to explain *why* campaigns succeed — or more critically, why they fail. We are moving from an attention economy to a **meaning economy**. In this new environment, marketers must ask:

"Did I earn attention?" evolves into
"Was the message relevant?" and ultimately,
"Did it result in a meaningful outcome?"

Most frameworks measure outputs — impressions, clicks, conversions — but fail to capture the **cognitive and emotional process** that drives consumer behavior. To unlock this understanding, we must model how human and machine attention works *in context*. That's where the EARO framework comes in.

What Is EARO?

EARO stands for **Exposure → Attention → Relevance → Outcome**. It is a theory-informed, AI-compatible, emotionally intelligent measurement framework designed for modern marketing. Unlike traditional KPIs, EARO integrates **cognitive science** (Relevance Realization), **predictive processing**, and **emotional modeling** to show not just *what* happened in a campaign, but *why*.

EARO draws from:

- **John Vervaeke's theory of Relevance Realization** — how attention filters for what matters
- **AIDA's classic marketing funnel** — upgraded for emotional and contextual complexity
- **Agentic AI behavior** — systems that respond dynamically to content, emotion, and real-time cues

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Why EARO Now?

Three inflection points are driving the need for a model like EARO:

1. **The Decline of Identity-Based Targeting**
   With cookies, MAIDs, and IDs becoming obsolete, campaigns increasingly rely on **contextual signals** and **moment-based optimization**.
2. **Rise of Agentic Systems**
   Tools like generative and agentic AI now *choose* creative assets and media placements dynamically. Measurement must capture their impact.

3. **Emotion Drives Long-Term Equity**
   Emotional resonance — not just attention — is the strongest predictor of brand memory, attachment, and advocacy. EARO bakes this in.

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2. The EARO Framework: Structure and Definitions

The EARO framework consists of four components—Exposure (E), Attention (A), Relevance (R), and Outcome (O)—each with multiple dimensions, totaling 22 measurable metrics. The framework explicitly models the Exposure → Attention → Emotion chain to address the *why* behind campaign impacts, ensuring a comprehensive evaluation of marketing effectiveness.

1. **Exposure (E):** Was the right person reached in the right context?
2. **Attention (A):** Did they notice? Did they engage?
3. **Relevance (R):** Was the message meaningful and emotionally resonant?
4. **Outcome (O):** Did it drive the intended business result?

Each stage includes measurable **sub-metrics**, which are weighted and scored independently and in aggregate.

2.1 Exposure (E) Component

Exposure measures the initial step of the audience encountering the campaign, setting the stage for attention and subsequent emotional engagement.

1. **Reach (RCH)**:
   - **Definition**: The total number of unique individuals who see the ad, measured via impressions adjusted for frequency capping.
   - **Purpose**: Quantifies the scale of exposure.
2. **Frequency (FRQ)**:
   - **Definition**: The average number of times an individual sees the ad:

$$\text{FRQ} = \frac{\text{Total Impressions}}{\text{Reach}}$$

FRQ=Total ImpressionsReach\text{FRQ} = \frac{\text{Total Impressions}}{\text{Reach}}FRQ=ReachTotal Impressions

   - **Purpose**: Measures exposure intensity, which impacts attention.
3. **Contextual Exposure Fit (CEF)**:
   - **Metric**: *Contextual Exposure Score (CES)*—a score (0–100) measuring how well the ad's placement aligns with the user's context, derived from contextual agentic AI (e.g., matching ad content to webpage sentiment or user intent).
   - **Purpose**: Ensures exposure occurs in a relevant context, enhancing the likelihood of attention.

Exposure Metric (E):

$$E = w_{19} \cdot \text{RCH} + w_{20} \cdot \text{FRQ} + w_{21} \cdot \text{CES}$$

E=w19⋅RCH+w20⋅FRQ+w21⋅CESE = w_{19} \cdot \text{RCH} + w_{20} \cdot \text{FRQ} + w_{21} \cdot \text{CES}E=w19⋅RCH+w20⋅FRQ+w21⋅CES

Weights (w19=0.4 w_{19} = 0.4 w19=0.4, w20=0.3 w_{20} = 0.3 w20=0.3, w21=0.3 w_{21} = 0.3 w21=0.3) reflect priorities, normalized to 0–100.

2.2 Attention (A) Component

Attention measures how effectively a campaign captures the audience's focus, serving as the second step in the Exposure → Attention → Emotion chain.

1. **Active Time in View (ATV)**:
    - **Definition**: The average time (in seconds) an ad is actively viewed, measured via eye-tracking, scroll-depth analysis, or video playback data.
    - **Purpose**: Captures the duration of initial attention.
2. **Attention Score (AS)**:
    - **Definition**: A normalized score (0–100) representing the likelihood of capturing attention, derived from tools like Adelaide's AU score.
    - **Purpose**: Provides a standardized measure of attention quality.
3. **Engagement Rate (ER)**:
    - **Definition**: The percentage of viewers who interact with the ad:

$$\text{ER} = \left(\frac{\text{Number of Interactions}}{\text{Total Impressions}} \right) \times 100$$

ER=(Number of InteractionsTotal Impressions)×100\text{ER} = \left(\frac{\text{Number of Interactions}}{\text{Total Impressions}} \right) \times 100ER=(Total ImpressionsNumber of Interactions)×100

    - **Purpose**: Measures active engagement.
4. **Sustained Attention (SA)**:
    - **Metric**: *Dwell Time Ratio (DTR)*:

$$\text{DTR} = \frac{\text{Actual Dwell Time}}{\text{Expected Dwell Time}}$$

DTR=Actual Dwell TimeExpected Dwell Time\text{DTR} = \frac{\text{Actual Dwell Time}}{\text{Expected Dwell Time}}DTR=Expected Dwell TimeActual Dwell Time

    - **Purpose**: Captures deeper engagement for immersive formats.
5. **Emotional Engagement (EE)**:
    - **Metric**: *Sentiment Engagement Score (SES)*—a score (0–100) derived from biometric data or social listening (e.g., sentiment analysis of X comments).
    - **Purpose**: Measures emotional impact as a downstream outcome of attention.

6. **Contextual Attention Fit (CAF)**:
    - **Metric**: *Platform Attention Index (PAI)*—a score (0–100) adjusting attention based on platform, device, and timing.
    - **Purpose**: Optimizes attention for context.

Attention Metric (A):

$$A = w_1 \cdot \text{ATV} + w_2 \cdot \text{AS} + w_3 \cdot \text{ER} + w_4 \cdot \text{DTR} + w_5 \cdot \text{SES} + w_6 \cdot \text{PAI}$$

A=w1⋅ATV+w2⋅AS+w3⋅ER+w4⋅DTR+w5⋅SES+w6⋅PAIA = w_1 \cdot \text{ATV} + w_2 \cdot \text{AS} + w_3 \cdot \text{ER} + w_4 \cdot \text{DTR} + w_5 \cdot \text{SES} + w_6 \cdot \text{PAI}A=w1⋅ATV+w2⋅AS+w3⋅ER+w4⋅DTR+w5⋅SES+w6⋅PAI

Weights (w1=0.25 w_1 = 0.25 w1=0.25, w2=0.25 w_2 = 0.25 w2=0.25, w3=0.15 w_3 = 0.15 w3=0.15, w4=0.15 w_4 = 0.15 w4=0.15, w5=0.1 w_5 = 0.1 w5=0.1, w6=0.1 w_6 = 0.1 w6=0.1) prioritize initial attention metrics, with SES as a downstream outcome, normalized to 0–100.

2.3 Relevance (R) Component

Relevance measures how well the campaign resonates with the audience, incorporating emotional drivers as the third step in the Exposure → Attention → Emotion chain.

1. **Relevance Score (RS)**:
    - **Definition**: A score (0–100) derived from surveys (e.g., “How relevant was this ad to you?”).
    - **Purpose**: Captures explicit audience perception.
2. **Click-Through Rate (CTR)**:
    - **Definition**:

$$\text{CTR} = \left(\frac{\text{Clicks}}{\text{Impressions}} \right) \times 100$$

CTR=(ClicksImpressions)×100\text{CTR} = \left(\frac{\text{Clicks}}{\text{Impressions}} \right) \times 100CTR=(ImpressionsClicks)×100

    - **Purpose**: A proxy for relevance.
3. **Personalization Index (PI)**:
    - **Definition**: A score (0–100) based on how well the ad matches user preferences.
    - **Purpose**: Measures targeting effectiveness.
4. **Cultural Resonance (CR)**:
    - **Metric**: *Cultural Alignment Score (CAS)*—a score (0–100) based on alignment with cultural trends, measured via NLP of social media.
    - **Purpose**: Ensures cultural relevance.
5. **Emotional Relevance (ER)**:
    - **Metric**: *Emotional Connection Index (ECI)*—a score (0–100) derived from sentiment analysis or biometric data.
    - **Purpose**: Measures emotional resonance.

6. **Dynamic Relevance (DR)**:
    - **Metric**: *Trend Responsiveness Score (TRS)*—a score (0–100) measuring adaptation to real-time trends, calculated by tracking keyword mentions (e.g., Google Trends, X data).
    - **Purpose**: Ensures the ad remains relevant amid shifting priorities.
7. **Emotional Driver Analysis (EDA)**:
    - **Metric**: *Emotional Driver Score (EDS)*—a score (0–100) identifying which campaign elements (e.g., creative, music) drive emotional responses, derived from A/B testing or sentiment analysis.
    - **Purpose**: Addresses the *why* by linking emotional outcomes to specific campaign features.

Relevance Metric (R):

$$R = w_7 \cdot \text{RS} + w_8 \cdot \text{CTR} + w_9 \cdot \text{PI} + w_{10} \cdot \text{CAS} + w_{11} \cdot \text{ECI} + w_{12} \cdot \text{TRS} + w_{22} \cdot \text{EDS}$$

R=w7·RS+w8·CTR+w9·PI+w10·CAS+w11·ECI+w12·TRS+w22·EDSR = w_7 \cdot \text{RS} + w_8 \cdot \text{CTR} + w_9 \cdot \text{PI} + w_{10} \cdot \text{CAS} + w_{11} \cdot \text{ECI} + w_{12} \cdot \text{TRS} + w_{22} \cdot \text{EDS}R=w7·RS+w8·CTR+w9·PI+w10·CAS+w11·ECI+w12·TRS+w22·EDS

Weights (w7=0.15 w_7 = 0.15 w7=0.15, w8=0.15 w_8 = 0.15 w8=0.15, w9=0.15 w_9 = 0.15 w9=0.15, w10=0.15 w_{10} = 0.15 w10=0.15, w11=0.15 w_{11} = 0.15 w11=0.15, w12=0.15 w_{12} = 0.15 w12=0.15, w22=0.1 w_{22} = 0.1 w22=0.1) reflect the addition of EDS, normalized to 0–100.

2.4 Outcome (O) Component

Outcome measures the campaign's impact on business goals, capturing immediate, long-term, and behavioral effects.

1. **Conversion Rate (CR)**:
    - **Definition**:

$$\text{CR} = \left(\frac{\text{Conversions}}{\text{Impressions}} \right) \times 100$$

CR=(ConversionsImpressions)×100\text{CR} = \left(\frac{\text{Conversions}}{\text{Impressions}} \right) \times 100CR=(ImpressionsConversions)×100

    - **Purpose**: Measures immediate action.
2. **Return on Ad Spend (ROAS)**:
    - **Definition**:

$$\text{ROAS} = \frac{\text{Revenue Attributed to Campaign}}{\text{Campaign Cost}}$$

ROAS=Revenue Attributed to CampaignCampaign Cost\text{ROAS} = \frac{\text{Revenue Attributed to Campaign}}{\text{Campaign Cost}}ROAS=Campaign CostRevenue Attributed to Campaign

    - **Purpose**: Quantifies financial return.
3. **Brand Lift (BL)**:

- **Definition**: The percentage increase in brand metrics (e.g., favorability, awareness) post-campaign, measured via surveys.
- **Purpose**: Captures improvements in brand perception.

4. **Long-Term Value (LTV)**:
   - **Metric** *Customer Lifetime Value Growth (CLVG)*:

$$\text{CLVG} = \left(\frac{\text{Post-Campaign CLV} - \text{Pre-Campaign CLV}}{\text{Pre-Campaign CLV}} \right) \times 100$$

CLVG=(Post-Campaign CLV−Pre-Campaign CLVPre-Campaign CLV)×100\text{CLVG} = \left(\frac{\text{Post-Campaign CLV} - \text{Pre-Campaign CLV}}{\text{Pre-Campaign CLV}} \right) \times 100CLVG=(Pre-Campaign CLVPost-Campaign CLV−Pre-Campaign CLV)×100

   - **Purpose**: Measures long-term revenue impact.
5. **Behavioral Impact (BI)**:
   - **Metric**: *Advocacy Rate (AR)*:

$$\text{AR} = \left(\frac{\text{Number of Advocates}}{\text{Total Exposed Users}} \right) \times 100$$

AR=(Number of AdvocatesTotal Exposed Users)×100\text{AR} = \left(\frac{\text{Number of Advocates}}{\text{Total Exposed Users}} \right) \times 100AR=(Total Exposed UsersNumber of Advocates)×100

   - **Purpose**: Captures behavioral shifts like advocacy.
6. **Attribution Accuracy (AA)**:
   - **Metric**: *Multi-Touch Attribution Score (MTAS)*—a score (0–100) reflecting attribution accuracy across touchpoints, calculated using models like Markov chains.
   - **Purpose**: Ensures accurate attribution.
7. **Brand Attachment (BA)**:
   - **Metric**: *Brand Attachment Score (BAS)*—a score (0–100) measuring the emotional bond between consumer and brand, derived from surveys or behavioral data. Correlate BAS with MMS and Attention metrics (e.g., SES, ECI):

$$r = \frac{\sum (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum (x_i - \bar{x})^2 \sum (y_i - \bar{y})^2}}$$

r=∑(xi−x¯)(yi−y¯)∑(xi−x¯)2∑(yi−y¯)2r = \frac{\sum (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum (x_i - \bar{x})^2 \sum (y_i - \bar{y})^2}}r=∑(xi−x¯)2∑(yi−y¯)2∑(xi−x¯)(yi−y¯)

   - **Purpose**: Captures long-term emotional impact.

Outcome Metric (O):

$$O = w_{13} \cdot \text{CR} + w_{14} \cdot \text{ROAS} + w_{15} \cdot \text{BL} + w_{16} \cdot \text{CLVG} + w_{17} \cdot \text{AR} + w_{18} \cdot \text{MTAS} + w_{23} \cdot \text{BAS}$$

$$O = w_{13} \cdot \text{CR} + w_{14} \cdot \text{ROAS} + w_{15} \cdot \text{BL} + w_{16} \cdot \text{CLVG} + w_{17} \cdot \text{AR} + w_{18} \cdot \text{MTAS} + w_{23} \cdot \text{BAS}$$

Weights ($w_{13} = 0.15$, $w_{14} = 0.15$, $w_{15} = 0.15$, $w_{16} = 0.15$, $w_{17} = 0.15$, $w_{18} = 0.15$, $w_{23} = 0.1$) reflect the addition of BAS, normalized to 0–100.

2.5 Composite EARO Score

The overall EARO Score combines the four components:

$$\text{EARO Score} = \delta \cdot E + \alpha \cdot A + \beta \cdot R + \gamma \cdot O$$

Where $\delta = 0.1$, $\alpha = 0.25$, $\beta = 0.25$, $\gamma = 0.4$, reflecting the foundational role of Exposure and emphasis on Outcomes, normalized to 0–100.

2.6 Weighting Rationale & Composite EARO Score

The default weighting schema:

- Exposure (E): 10%
- Attention (A): 25%
- Relevance (R): 25%
- Outcome (O): 40%

These reflect research findings from:

- **Binet & Field** on long-term brand effect driven by emotional resonance
- **Vervaeke** on attention as a *relevance realization filter*
- **Adelaide + Lumen + SPARK Neuro** showing that viewability ≠ impact

Composite Score:
EARO = (0.1 × E) + (0.25 × A) + (0.25 × R) + (0.4 × O)

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3. Efficacy of the EARO Framework vs. Attention-Only Frameworks

Attention-only frameworks, such as those relying on impressions, viewability, or basic engagement metrics, provide a narrow view of campaign performance. The EARO framework offers several advantages, supported by mathematical and statistical analysis:

3.1 Holistic Evaluation

Attention metrics (e.g., ATV, AS, ER) focus on visibility and initial engagement but ignore the causal chain from exposure to emotional resonance and outcomes. The EARO framework's 22 metrics provide a comprehensive view, capturing emotional, cultural, and long-term impacts.

3.2 Actionable Insights

By breaking down each component into multiple dimensions, EARO identifies specific areas for improvement. For example, a low EDS (Emotional Driver Score) indicates which campaign elements fail to evoke emotion, while a high BAS (Brand Attachment Score) highlights long-term success.

3.3 Statistical Robustness

The EARO framework allows for correlation analysis between dimensions. For instance, a Pearson correlation coefficient between ECI (Emotional Connection Index) and BAS (Brand Attachment Score) can reveal whether emotional relevance drives attachment:

$$r = \frac{\sum (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum (x_i - \bar{x})^2 \sum (y_i - \bar{y})^2}}$$

r=∑(xi−x¯)(yi−y¯)∑(xi−x¯)2∑(yi−y¯)2r = \frac{\sum (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum (x_i - \bar{x})^2 \sum (y_i - \bar{y})^2}}r=∑(xi−x¯)2∑(yi−y¯)2∑(xi−x¯)(yi−y¯)

A high r (e.g., 0.7) would confirm the relationship, guiding optimization.

3.4 Alignment with Contextual Agentic AI

As discussed in *Contextual 3.0*, context agents excel at interpreting real-time signals to optimize ad relevance. The EARO framework's CES, TRS, and CAS metrics directly measure this capability, ensuring campaigns leverage contextual AI effectively.

3.5 Focus on the *Why*

The Exposure → Attention → Emotion chain, integrated into the EARO framework, addresses the *why* behind campaign impacts. Metrics like EDS link emotional responses to specific campaign elements, while BAS captures the long-term emotional bond, aligning with findings from Omnicom Hearts & Science on Brand Attachment.

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4. Marketing Examples: Applying the EARO Framework

Below, we present two marketing examples to demonstrate the EARO framework's application, targeting advanced audiences with full mathematical and statistical detail. Both examples incorporate contextual agentic AI, aligning with the principles from *Contextual 3.0*.

4.1 Example 1: Tech Company's Product Launch Campaign

A tech company launches a new software product using a video ad on YouTube, leveraging context agents to optimize placement based on user intent signals.

Exposure (E)

- **RCH**: 1M unique users.
- **FRQ**: 2 (average frequency)
- **CES**: 60 (moderate contextual fit)

$$E = (0.4 \cdot 1) + (0.3 \cdot 2) + (0.3 \cdot 60) = 0.4 + 0.6 + 18 = 19$$

E=(0.4⋅1)+(0.3⋅2)+(0.3⋅60)=0.4+0.6+18=19

Normalized: E=76

Attention (A)

- **ATV**: 6 seconds
- **AS**: 80
- **ER**: 5% (50,000 interactions from 1M impressions)
- **DTR**: 1.2
- **SES**: 60
- **PAI**: 70

$$A = (0.25 \cdot 6) + (0.25 \cdot 80) + (0.15 \cdot 5) + (0.15 \cdot 1.2) + (0.1 \cdot 60) + (0.1 \cdot 70) = 1.5 + 20 + 0.75 + 0.18 + 6 + 7 = 35.43$$

A=(0.25·6)+(0.25·80)+(0.15·5)+(0.15·1.2)+(0.1·60)+(0.1·70)=1.5+20+0.75+0.18+6+7=35.43

Normalized: A=70.86

Relevance (R)

- **RS**: 60
- **CTR**: 2% (20,000 clicks from 1M impressions)
- **PI**: 50
- **CAS**: 55
- **ECI**: 5
- **TRS**: 40
- **EDS**: 45 (A/B testing shows technical jargon reduces emotional resonance).

$$R = (0.15 \cdot 60) + (0.15 \cdot 2) + (0.15 \cdot 50) + (0.15 \cdot 55) + (0.15 \cdot 50) + (0.15 \cdot 40) + (0.1 \cdot 45) = 9 + 0.3 + 7.5 + 8.25 + 7.5 + 6 + 4.5 = 43.05$$

R=(0.15·60)+(0.15·2)+(0.15·50)+(0.15·55)+(0.15·50)+(0.15·40)+(0.1·45)=9+0.3+7.5+8.25+7.5+6+4.5=43.05

Normalized: R=43.05

Outcome (O)

1. **CR**: 1% (10,000 conversions from 1M impressions)
2. **ROAS**: 2 ($50,000 cost, $100,000 revenue)
3. **BL**: 5%
4. **CLVG**: 3%
5. **AR**: 5%
6. **MTAS**: 70
7. **BAS**: 40 (low emotional bond).

$$O = (0.15 \cdot 1) + (0.15 \cdot 2) + (0.15 \cdot 5) + (0.15 \cdot 3) + (0.15 \cdot 5) + (0.15 \cdot 70) + (0.1 \cdot 40) = 0.15 + 0.3 + 0.75 + 0.45 + 0.75 + 10.5 + 4 = 16.9$$

O=(0.15·1)+(0.15·2)+(0.15·5)+(0.15·3)+(0.15·5)+(0.15·70)+(0.1·40)=0.15+0.3+0.75+0.45+0.75+10.5+4=16.9O

Normalized: O=42.25

EARO Score

$$\text{EARO Score} = (0.1 \cdot 76) + (0.25 \cdot 70.86) + (0.25 \cdot 43.05) + (0.4 \cdot 42.25) = 7.6 + 17.715 + 10.7625 + 16.9 = 52.9775$$

EARO Score=(0.1⋅76)+(0.25⋅70.86)+(0.25⋅43.05)+(0.4⋅42.25)=7.6+17.715+10.7625+16.9=52.9775

Attention-Only Analysis

Using only attention metrics (ATV, AS, ER):

$$A_{\text{simple}} = (0.4 \cdot 6) + (0.4 \cdot 80) + (0.2 \cdot 5) = 2.4 + 32 + 1 = 35.4$$

Asimple=(0.4⋅6)+(0.4⋅80)+(0.2⋅5)=2.4+32+1=35.4A_{\text{simple}} = (0.4 \cdot 6) + (0.4 \cdot 80) + (0.2 \cdot 5) = 2.4 + 32 + 1 = 35.4

Normalized: Asimple=70.8

Analysis

- **Attention-Only**: The high Asimple=70.8 A_{\text{simple}} = 70.8 Asimple=70.8 suggests a successful campaign, but it misses critical weaknesses.
- **EARO Framework**: The EARO Score (52.98) reveals low relevance (R=43.05 R = 43.05 R=43.05) and outcomes (O=42.25 O = 42.25 O=42.25). Low EDS (45) and BAS (40) highlight why the campaign underperformed: technical messaging reduced emotional resonance, limiting brand attachment. Context agents could improve CES by optimizing placement for emotionally receptive contexts.

4.2 Example 2: Fashion Brand's AR Campaign on Snapchat

A fashion brand uses Snapchat's AR Lenses for virtual try-ons, with context agents optimizing targeting based on trending fashion topics.

Exposure (E)

- **RCH**: 1M unique users.
- **FRQ**: 1.5
- **CES**: 90 (context agents optimize for fashion-interested users)

$$E = (0.4 \cdot 1) + (0.3 \cdot 1.5) + (0.3 \cdot 90) = 0.4 + 0.45 + 27 = 27.85$$

E=(0.4⋅1)+(0.3⋅1.5)+(0.3⋅90)=0.4+0.45+27=27.85

Normalized: E=92.83

Attention (A)

- **ATV: 10 seconds**
- **AS: 90**
- **ER: 8% (80,000 interactions from 1M impressions)**
- **DTR: 1.5**
- **SES: 85**

- **PAI: 90**

$$A = (0.25 \cdot 10) + (0.25 \cdot 90) + (0.15 \cdot 8) + (0.15 \cdot 1.5) + (0.1 \cdot 85) + (0.1 \cdot 90) = 2.5 + 22.5 + 1.2 + 0.225 + 8.5 + 9 = 43.925$$

A=(0.25⋅10)+(0.25⋅90)+(0.15⋅8)+(0.15⋅1.5)+(0.1⋅85)+(0.1⋅90)=2.5+22.5+1.2+0.225+8.5+9=43.925

Normalized: A=87.85

Relevance (R)

- **RS**: 85
- **CTR**: 5% (50,000 clicks from 1M impressions)
- **PI**: 90
- **CAS**: 80
- **ECI**: 90
- **TRS**: 70
- **EDS**: 85 (AR experience drives joy)

$$R = (0.15 \cdot 85) + (0.15 \cdot 5) + (0.15 \cdot 90) + (0.15 \cdot 80) + (0.15 \cdot 90) + (0.15 \cdot 70) + (0.1 \cdot 85) = 12.75 + 0.75 + 13.5 + 12 + 13.5 + 10.5 + 8.5 = 71.5$$

R=(0.15⋅85)+(0.15⋅5)+(0.15⋅90)+(0.15⋅80)+(0.15⋅90)+(0.15⋅70)+(0.1⋅85)=12.75+0.75+13.5+12+13.5+10.5+8.5=71.5

Normalized: R=71.5

Outcome (O)

- **CR**: 3% (30,000 conversions from 1M impressions)
- **ROAS**: 5 ($20,000 cost, $100,000 revenue)
- **BL**: 15%
- **CLVG**: 10%
- **AR**: 20%
- **MTAS**: 85
- **BAS**: 80 (strong emotional bond)

$$O = (0.15 \cdot 3) + (0.15 \cdot 5) + (0.15 \cdot 15) + (0.15 \cdot 10) + (0.15 \cdot 20) + (0.15 \cdot 85) + (0.1 \cdot 80) = 0.45 + 0.75 + 2.25 + 1.5 + 3 + 12.75 + 8 = 28.7$$

O=(0.15⋅3)+(0.15⋅5)+(0.15⋅15)+(0.15⋅10)+(0.15⋅20)+(0.15⋅85)+(0.1⋅80)=0.45+0.75+2.25+1.5+3+12.75+8=28.7

Normalized: O=71.75

EARO Score

$$\text{EARO Score} = (0.1 \cdot 92.83) + (0.25 \cdot 87.85) + (0.25 \cdot 71.5) + (0.4 \cdot 71.75) = 9.283 + 21.9625 + 17.875 + 28.7 = 77.8205$$

Attention-Only Analysis

$$A_{\text{simple}} = (0.4 \cdot 10) + (0.4 \cdot 90) + (0.2 \cdot 8) = 4 + 36 + 1.6 = 41.6$$

EARO Score=(0.1⋅92.83)+(0.25⋅87.85)+(0.25⋅71.5)+(0.4⋅71.75)=9.283+21.9625+17.875+28.7=77.8205

Asimple=(0.4⋅10)+(0.4⋅90)+(0.2⋅8)=4+36+1.6=41.6

Normalized: Asimple=83.2

Analysis

- **Attention-Only**: The high Asimple=83.2 A_{\text{simple}} = 83.2 Asimple=83.2 indicates strong engagement, but it doesn't explain why the campaign succeeded.
- **EARO Framework**: The EARO Score (77.82) confirms success, with high relevance (R=71.5 R = 71.5 R=71.5) and outcomes (O=71.75 O = 71.75 O=71.75). High CES (90), EDS (85), and BAS (80) confirm the role of context agents in optimizing exposure and the AR experience in driving emotional connection and brand attachment. The *why* is clear: the immersive format and precise targeting fostered joy, leading to a strong emotional bond.

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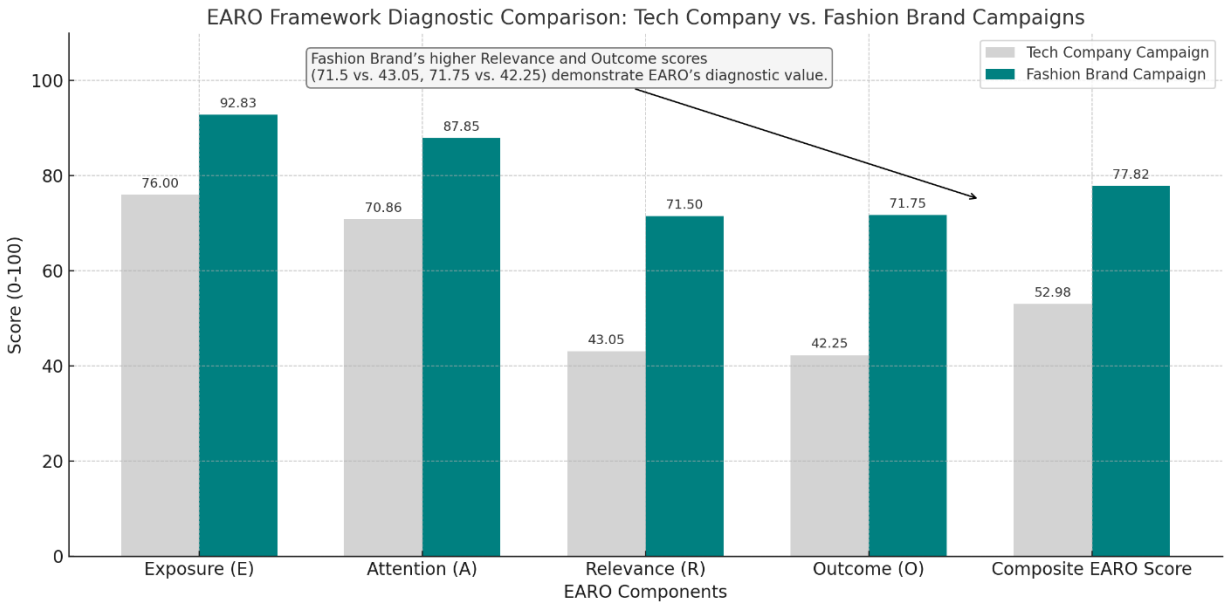
5. Graph: Comparison of EARO Scores for Tech Company and Fashion Brand Campaigns

This visual highlight the diagnostic power of EARO, especially in how **Relevance** and **Outcome** drive superior performance.

Summary of Key Insights

- **Fashion Brand's Success**: The Fashion Brand's high EARO Score (77.82) reflects a balanced, emotionally resonant campaign that excelled in Relevance (71.5) and Outcome (71.75), driven by strong emotional metrics (EDS: 85, ECI: 90) and effective use of contextual AI (CES: 90).
- **Tech Company's Weaknesses**: The Tech Company's lower EARO Score (52.98) is due to poor Relevance (43.05) and Outcome (42.25), stemming from a lack of emotional resonance (EDS: 45, ECI: 50) and weaker contextual targeting (CES: 60).
- **Diagnostic Power**: The EARO framework's component-level breakdown pinpoints specific areas for improvement, such as the Tech Company's need to focus on emotional storytelling and better contextual placement.
- **Emotional Impact**: Emotional resonance is a critical driver of long-term outcomes like brand attachment, as evidenced by the Fashion Brand's high BAS (80) compared to the Tech Company's low BAS (40).
- **Contextual AI's Value**: Effective use of contextual agentic AI (as seen in the Fashion Brand's high CES) enhances Exposure, setting the stage for success in subsequent components.



"The comparison of EARO Scores (Tech Company: 52.98 vs. Fashion Brand: 77.82) underscores the framework's diagnostic power. The Fashion Brand's success is driven by high Relevance (71.5) and Outcome (71.75), fueled by emotional resonance (EDS: 85, ECI: 90) and effective contextual targeting (CES: 90). In contrast, the Tech Company's low Relevance (43.05) and Outcome (42.25) highlight a failure to connect emotionally (EDS: 45, ECI: 50), despite strong Exposure (76) and Attention (70.86). These insights demonstrate how the EARO framework identifies specific areas for improvement, such as enhancing emotional storytelling and leveraging contextual AI, to drive better campaign outcomes."

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6. Discussion and Implications

The EARO framework offers a significant advancement over attention-only frameworks, as demonstrated by the examples. Its 22 metrics provide a granular view of campaign performance, enabling marketers to optimize for emotional resonance, cultural alignment, and long-term impact—elements critical in the age of AGI and contextual agentic AI. The framework's integration with context agents, as discussed in *Contextual 3.0*, ensures campaigns remain dynamically relevant by leveraging real-time signals (e.g., CES, TRS), while its alignment with Vervaeke's theories supports deeper audience connections through relevance realization and collective intelligence.

The Exposure → Attention → Emotion chain, embedded within the EARO framework, addresses the *why* behind campaign impacts, a critical gap in traditional metrics. For instance, the Emotional Driver Score (EDS) links emotional responses to specific campaign elements (e.g., creative, music), providing actionable insights for optimization. Similarly, the Brand Attachment Score (BAS) captures the long-term emotional bond between consumer and brand, aligning with findings from Omnicom Hearts & Science, where correlations between MMS, Attention, and Brand Attachment exceeded r=0.6 r = 0.6 r=0.6. This focus on *why*—rather than just *what*—enables marketers to understand the causal pathways driving outcomes, fostering more effective strategies.

The EARO framework also aligns with classic marketing methodologies like AIDA (Attention, Interest, Desire, Action) and ACA (Awareness, Comprehension, Action). The Exposure component maps to awareness, Attention to initial engagement, Relevance to interest and comprehension (via emotional and cultural resonance), and Outcome to action and long-term impact (via conversions, advocacy, and brand

attachment). This alignment ensures the framework is both theoretically grounded and practically applicable, bridging traditional marketing principles with modern AI-driven approaches.

For advanced marketing professionals, the EARO framework provides a data-driven approach to campaign evaluation, supported by mathematical rigor and statistical analysis. The ability to calculate correlations between dimensions (e.g., ECI and BAS) allows for deeper insights into how emotional relevance drives long-term outcomes. Additionally, the framework's modular structure enables segmentation analysis—calculating EARO Scores for different audience segments (e.g., Gen Z vs. Millennials)—and predictive modeling, where machine learning can forecast scores based on historical data. These capabilities make EARO a powerful tool for real-time optimization in the context of AGI and contextual agentic AI.

6.1 EARO as Strategic Operating System

EARO is not a KPI layer. It's a **strategic measurement OS** that informs:

- **Creative Optimization**: EDS and ECI show which visuals/messages resonate
- **Media Allocation**: CES, PAI, and CAS highlight environments worth scaling
- **Team Alignment**: Helps creative, media, data teams speak a shared performance language
- **AI Collaboration**: Serves as the measurement logic layer behind agentic AI-driven orchestration

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6.2 EARO Diagnostic Decision Matrix

If This Is Low...	Investigate This...	Optimize Via...
Exposure	CEF or platform clutter	Re-evaluate inventory quality
Attention	DTR, SES, or AS	Improve visual hierarchy + motion triggers
Relevance	CAS, PI, TRS	Infuse trends, deepen emotional story
Outcome	BAS, CR, MTAS	Align CTA to emotional motivators
High A, Low R	Shallow engagement	Refocus on value-driven relevance
High R, Low O	Broken post-click path	Audit UX or offer design

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7. Conclusion

The EARO framework redefines how marketing effectiveness is measured, offering a holistic, measurable model that captures the complexities of modern campaigns. By incorporating 22 metrics across Exposure, Attention, Relevance, and Outcome, the framework provides actionable insights that attention-only metrics cannot. Its focus on the Exposure → Attention → Emotion chain addresses the *why* behind campaign impacts, while the inclusion of Brand Attachment ensures long-term emotional bonds *why* it happens, providing a more holistic approach akin to AIDA/ACA methodologies. The revised examples demonstrate how these enhancements offer deeper insights, making the EARO framework an even more powerful tool for advanced marketers in the age of AGI and contextual agentic AI.

The EARO framework's integration with contextual agentic AI, as highlighted in *Contextual 3.0*, ensures campaigns remain dynamically relevant, while its alignment with cognitive science principles (e.g., relevance realization, collective intelligence) fosters deeper audience connections. Future research could explore predictive modeling to forecast EARO Scores, further enhancing its utility in real-time optimization. For advanced marketers, the EARO framework provides a robust, data-driven approach to campaign evaluation, ensuring campaigns not only capture attention but also resonate deeply and drive meaningful, long-term outcomes.

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8. Appendix - I

- **Exposure**
  - **Reach (RCH)** — Unique users exposed
  - **Frequency (FRQ)** — Average exposures per user
  - **Contextual Exposure Fit (CEF)** — Match score between ad content and page environment
- **Attention**
  - **Active Time in View (ATV)** — Seconds in focus
  - **Attention Score (AS)** — Composite from tools like Adelaide AU or Lumen
  - **Engagement Rate (ER)** — User-initiated actions

- **Sustained Attention (DTR)** — Dwell Time Ratio
- **Sentiment Engagement Score (SES)** — Emotional response (biometric/sentiment)
- **Platform Attention Index (PAI)** — Historical context-aware attention proxy

🔹 **Relevance**

- **Relevance Score (RS)** — User survey or inferred perception
- **Click-Through Rate (CTR)** — Interaction signal
- **Personalization Index (PI)** — Match to user data/persona
- **Cultural Alignment Score (CAS)** — Fit to cultural trend, moment
- **Emotional Connection Index (ECI)** — Intensity and positivity of emotional impact
- **Trend Responsiveness Score (TRS)** — Reflects real-time adaptability
- **Emotional Driver Score (EDS)** — Measures emotional attribution to creative inputs

🔹 **Outcome**

- **Conversion Rate (CR)** — Immediate action
- **ROAS** — Return on Ad Spend
- **Brand Lift (BL)** — Awareness, recall, favorability
- **CLV Growth (CLVG)** — Post-exposure lifetime value change
- **Advocacy Rate (AR)** — Word-of-mouth or shareability
- **Attribution Accuracy (MTAS)** — Markov or ML model precision
- **Brand Attachment Score (BAS)** — Emotional bond strength

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9. Appendix – II : Summary of EARO Framework Metrics and Weights

Component	Dimension (Metric)	Weight
Exposure (E)		**0.10**
	Reach (RCH)	0.4
	Frequency (FRQ)	0.3
	Contextual Exposure Fit (CEF) - Contextual Exposure Score (CES)	0.3
Attention (A)		**0.25**
	Active Time in View (ATV)	0.25
	Attention Score (AS)	0.25
	Engagement Rate (ER)	0.15

Component	Dimension (Metric)	Weight
	Sustained Attention (SA) - Dwell Time Ratio (DTR)	0.15
	Emotional Engagement (EE) - Sentiment Engagement Score (SES)	0.1
	Contextual Attention Fit (CAF) - Platform Attention Index (PAI)	0.1
Relevance (R)		**0.25**
	Relevance Score (RS)	0.15
	Click-Through Rate (CTR)	0.15
	Personalization Index (PI)	0.15
	Cultural Resonance (CR) - Cultural Alignment Score (CAS)	0.15
	Emotional Relevance (ER) - Emotional Connection Index (ECI)	0.15
	Dynamic Relevance (DR) - Trend Responsiveness Score (TRS)	0.15
	Emotional Driver Analysis (EDA) - Emotional Driver Score (EDS)	0.1
Outcome (O)		**0.40**
	Conversion Rate (CR)	0.15
	Return on Ad Spend (ROAS)	0.15
	Brand Lift (BL)	0.15
	Long-Term Value (LTV) - Customer Lifetime Value Growth (CLVG)	0.15
	Behavioral Impact (BI) - Advocacy Rate (AR)	0.15
	Attribution Accuracy (AA) - Multi-Touch Attribution Score (MTAS)	0.15
	Brand Attachment (BA) - Brand Attachment Score (BAS)	0.1

Notes on the Table

- **Component Weights**: The weights for the components (E: 0.10, A: 0.25, R: 0.25, O: 0.40) reflect their contribution to the composite EARO Score, as specified in the white paper: EARO Score=δ·E+α·A+β·R+γ·O\text{EARO Score} = \delta \cdot E + \alpha \cdot A + \beta \cdot R + \gamma \cdot OEARO Score=δ·E+α·A+β·R+γ·O where δ=0.1 \delta = 0.1 δ=0.1, α=0.25 \alpha = 0.25 α=0.25, β=0.25 \beta = 0.25 β=0.25, γ=0.4 \gamma = 0.4 γ=0.4.
- **Metric Weights**: Within each component, the weights for individual metrics (e.g., w19=0.4 w_{19} = 0.4 w19=0.4 for RCH in Exposure) are used to calculate the component score (e.g., E=w19·RCH+w20·FRQ+w21·CES E = w_{19} \cdot \text{RCH} + w_{20} \cdot \text{FRQ} + w_{21} \cdot \text{CES} E=w19·RCH+w20·FRQ+w21·CES), normalized to 0–100.