SAMI Segmentation AI - Executive Summary

Data Prep & Engineering

- Feature selection, normalization, missing data imputation.
- Topic modeling (LDA/BERT), psychographics, sentiment analysis.

Segmentation Algorithms

- K-Means, DBSCAN, GMM, Hierarchical Clustering.
- Autoencoders and PCA for dimensionality reduction.

Latent Class Analysis (LCA)

- Model selection (AIC, BIC), segment labeling, entropy.
- Validation: stability tests, covariate regression.

Predictive Analytics

- Churn prediction by segment, SHAP insights.
- Next Best Action: RL models for ROI-optimized actions.

Anomaly Detection

- Outlier/fraud detection using Isolation Forest, One-Class SVM.
- Trend detection via time-series clustering.

Deployment & Monitoring

- A/B testing (Bayesian methods), segmentation refresh with PySpark.
- Drift detection and update scheduling.

Visualization

- t-SNE, UMAP, segment dashboards, heatmaps, centroid plots.

Strategic Insights

- Profitability by segment, GTM alignment, retention strategies.