



Prodapt

# Reimagine. Streaming.

## Customer Experience Assurance (CXA)

Enabling flawless experiences for streaming

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# "Reimagine. Streaming." to unravel the nuances of customer streaming needs and desires.

The streaming wars are getting brutal! There is cut-throat competition for gaining subscribers, monetizing time, and dominating the streaming space. Today, viewers expect a richer, high-quality, and more engaging viewing experience that enriches their lives rather than just more content, options, and personalized recommendations. We have witnessed a shift in streaming services - **customers value the experience just as much as the content!**

While content and cost are essential components of the success of streaming services, customer experience is becoming the differentiator. The statistics below indicate that delivering a brilliant customer experience (CX) can be a crucial winning factor in keeping customers engaged, delighted and loyal.

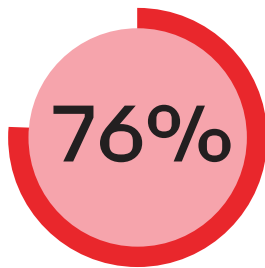




of customers are willing to spend more to buy from companies that give them a good customer experience



would switch to a competitor after more than one bad experience



of customers would stop using a service if a problem like rebuffering occurred several times

Delivering great CX consistently across the complex content consumption and delivery ecosystem is a demanding yet critical task. Digital companies must contend with multiple variables and validate engineering and customer views of QoE KPIs to ensure optimal experiences.

Major challenges in assuring delightful customer experiences include:

- **Siloed data platforms**

It takes a well-governed, scalable central data hub to collect, store and correlate customer journey and experience data from various sources such as Headend devices, CDN network, Audio/Video Backend applications/microservices, and end-user devices to generate predictive & actionable insights

- **Lack of continuous monitoring**

Implementing a continuous monitoring mechanism for all the critical CX impacting backend video services (100s of microservices) can be difficult

- **Issues with performance tracking**

Complexities in measuring and monitoring audio/video performance KPIs such as MOS, video bitrate, re-buffering, slow start-up time, playback errors, video start failures

## Continuous CX monitoring, and enhancement require a solution that enables

- Experience-centric streaming service across build, deployment, production, and operations phases
- Establishing a well-governed central data hub to collect, correlate, analyse, and predict audio/video QoS & QoE KPIs
- CX-impacting teams, including Engineering, QA, and Operations, with visibility across different "Experience Points"





## Customer Experience Assurance (CXA) solution

Continuous monitoring framework for proactive management of QoS/QoE KPIs and improvement of streaming CX

CXA focuses on perfecting digital experiences powered by AI-based QoE monitoring and prediction platform. It enables experience-centric development of streaming services and drives greater collaboration among product, engineering, QA, and DevOps teams.

- Assured glitch-free live streaming experience, at peak concurrent viewership
- 30% faster time-to-market for new releases, with assured QoE

## Key focus areas of Customer Experience Assurance solution (CXA)

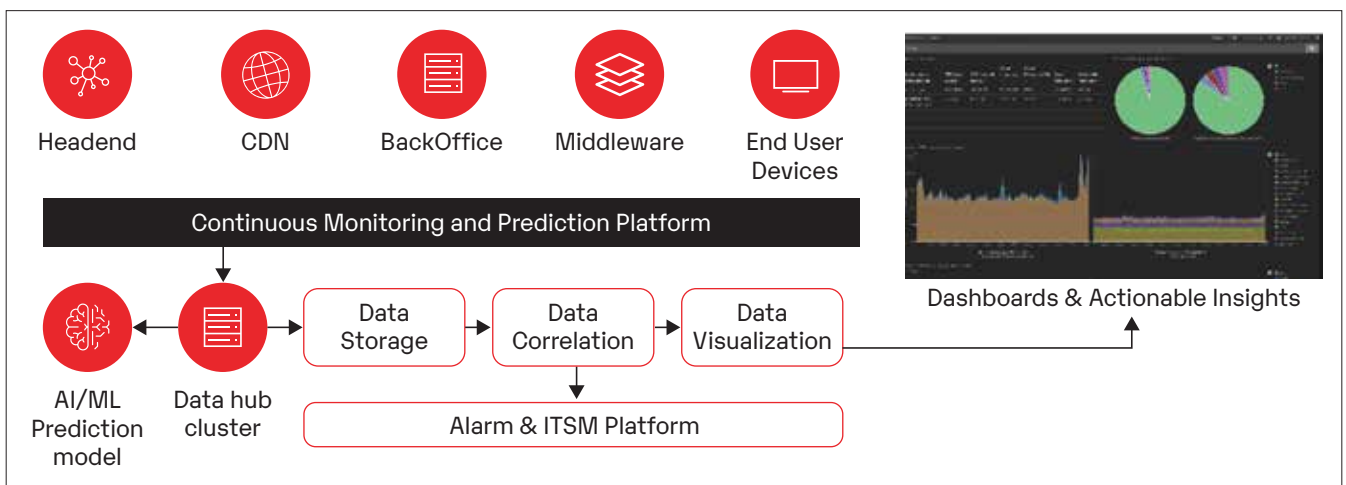


Fig: Customer eXperience Assurance (CXA)

## 1. Assuring quality at the application build phase

- For Engineering & QA Teams
  - Well-governed, scalable central data hub and continuous monitoring & prediction platform – to collect diverse customer journey and experience data from varied sources such as Headend, CDN, Backend applications/microservices, and end-user devices. Further, correlate, analyse & predict audio/video QoS & QoE KPIs
  - CXA Dashboards to enable KPIs validation, benchmarking, and verification
- Triage dashboards with deeper analysis and insights to enable faster root cause analysis and resolution

## 2. Predicting release stability at the Go-live phase

- For release managers
  - ML models to predict release/streaming service stability before rollout – make Go/No-Go decisions
  - Service stability scores for key features such as Livestreaming, VoD, Searches, and nDVR

## 3. Continuously improving CX in production for VoD and Live streaming events

- For Ops Team
  - End user experience insights – compare QoE metrics for various locations, across multiple devices/OS, and networks
  - Perceptual video quality – AI-based MOS (Mean opinion score)

## Key capabilities delivered

- ① Measure video quality from viewers eyes using reference free MOS score
- ① Measure performance KPIs particularly for DRM- protected content
- ① AI-powered QoE analysis, issue detection and recommendations to enable faster resolution
- ① Measure performance of In-App advertising campaigns
- ① Monitor performance of streaming back-end service elements (e.g. Playouts, Searches, CDN etc.)



## Focus Area 1: Assuring quality at the application build phase

We build customized dashboards to enable QoS/QoE KPIs validation, benchmarking, and verification before the service opened to customers. The salient features of our dashboard include:

- Prebuilt dashboard templates to assist in reducing development costs and time-to-market
- Ability to capture media quality of experience and performance KPIs, particularly of DRM-protected content
- Off-the-shelf and customizable solutions to cover end-to-end QoE needs
- Automation framework to collect key data from various sources, test, and measure QoE metrics
- Actionable insights presented in highly intuitive visual dashboards
- Integration with Ticketing systems to enable auto-ticket creation for critical issues
- Triage dashboards with deeper analysis and insights to allow faster root cause analysis and resolution by developers

### Sample Dashboards



## Focus Area 2: Predicting release stability at the Go-live phase

Machine Learning models to predict release stability and behaviour of services prior to rollout (at go-live phase)

CXA's robust prediction model enable release managers to analyze the stability and behavior of the upcoming release, compare it with release in production, and make wise Go/No-Go decisions.

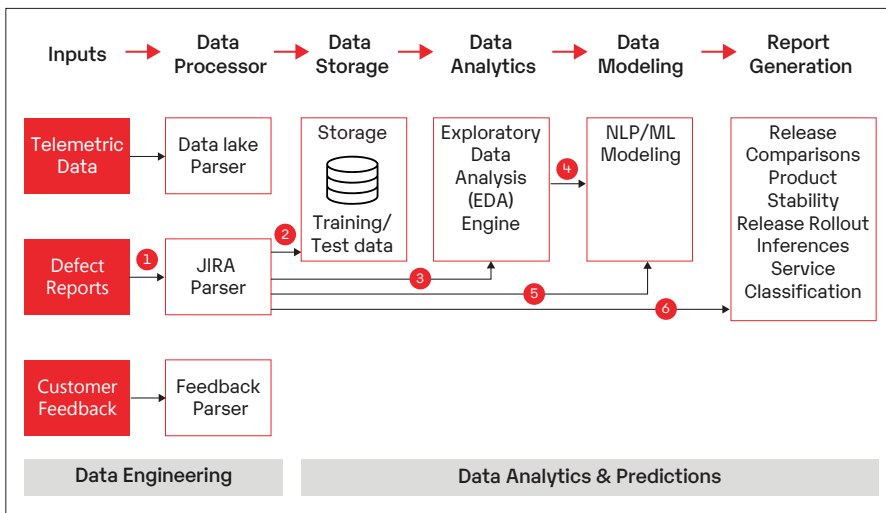


Figure 1: Prediction Model

Features	Current Release Success %	PROD Success %
Replay	99%	98.5%
nDVR	97%	98%
VoD	99%	99%
Searches	97%	96%
Purchase	99%	99%

Features	Current Release Failure %	PROD Failure %
STB Crashes	99%	98.5%
Customer Facing Errors	4%	4%
App Crashes	1%	1%

Fig: Estimate rollout inferences of different features

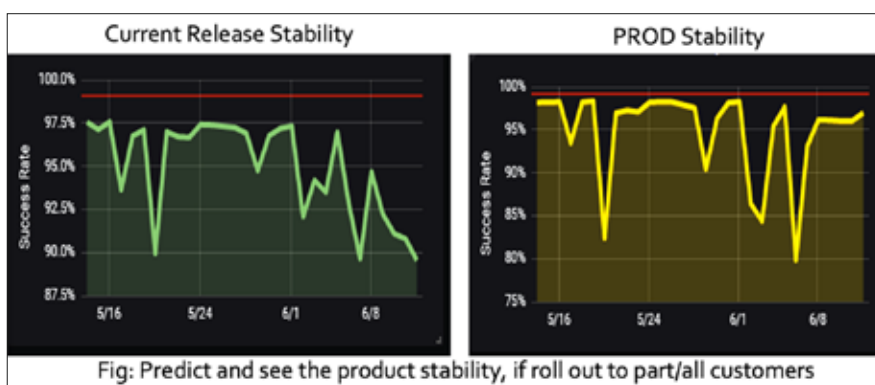
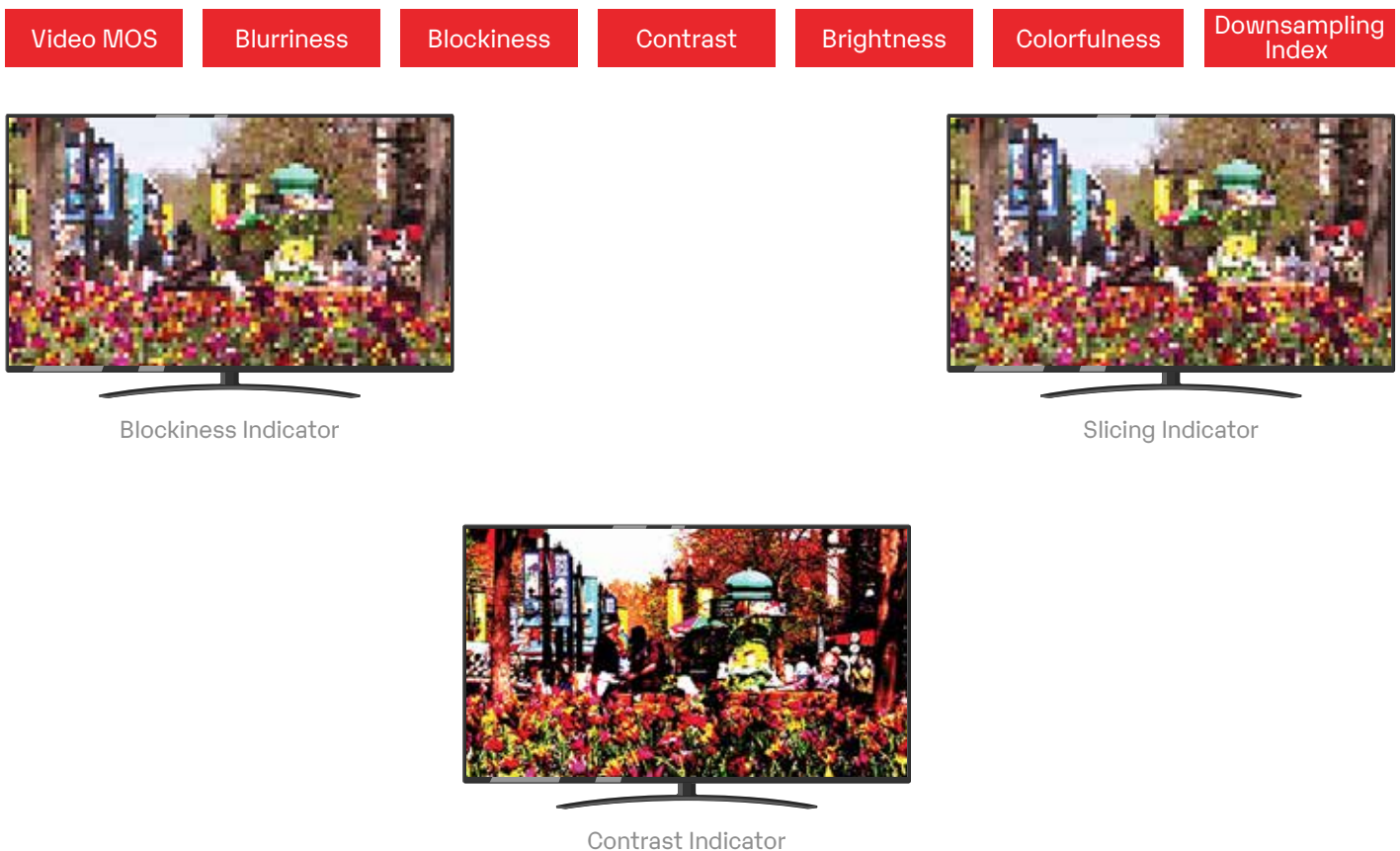


Fig: Predict and see the product stability, if roll out to part/all customers



## Focus Area 3: Continuously improving CX in production for VoD and Live streaming events

We measure and quantify the quality and performance of video content by measuring video quality MOS, Reference-free video MOS, and VMAF-based full reference video MOS. We analyze video performance metrics using the following indicators: Commercial Black, Blockiness, BlockLoss, Blur, Contrast, Exposure, Flickering, Freezing, Interlacing, Letterboxing, Noise, Pillar-boxing, Slicing, Spatial Activity, Temporal Activity, Video Frame Rate Drops, and Loading/Buffering Time. Our solution enables easy debugging of QoE and protocol issues for technologies used in live streaming, such as WebRTC and UDP.



Data & AI Analytics platform: The CXA's core includes a powerful Data & AI Analytics platform to enable continuous performance monitoring, identification of issues and ML-based recommendations for on-demand and live events.

- Expert system machine learning models for measuring performance & QoE and providing recommendations and insights
- Livestreaming KPIs monitored include Page load rate, screen rotation, Stream start failure, Buffering, etc.
- Packet-level network data and device KPIs are measured and analyzed through ML models to provide actionable insights
- The system generates auto-alerts, application/service scale-out triggers when the monitored KPI reaches its threshold



## CXA solution covers the end-to-end QoE needs of OTT operators and solution providers.

CXA solution helps to easily identify potential CX issues, investigate them, and quickly take actions to assure customer experience and improve their product/service.

Glitch-free Live  
streaming experience,  
even with concurrent  
users reaching the  
peak

60%  
improvement in  
NPS

<25%  
reduction in  
production issues

30%  
improvement in  
Time to Market for  
new software  
releases

CXA continuously enhances engineering view of QoE, and customers view of QoE – positioning the company for continued leadership



# CXA enables an Entertainment leader in Europe to deliver flawless digital experience for 600K concurrent users watching live Formula 1 series

## Client Needs

Our client, a leading streaming and entertainment service provider in Europe sought to build a unified CXA solution to support its next generation media services delivery catering to multiple affiliates across the pan European region.

They required a robust framework to Automate E2E QoE assurance to deliver perfect user experience across multiple platforms and form factors.

## Prodapt's Solution

**AI-based Customer eXperience Assurance (CXA) solution:** Design, Development and Implementation of CXA solution with dashboards for Engineering, QA and Ops teams to track 1500+ service metrics.

Product rollout certification and QoE (for STBs, OTT App) using field trial and scalability profiling for over 1M+ concurrent livestreaming users.

ML-based product release stability prediction - enable release managers to analyze the stability and behavior of services for a new release, prior to the release.

**Multi-device assurance:** Application assurance across different devices, OS to ensure a consistent experience for users. Scope covered: Linear TV – 125+ channels | Replay – 141 million/yr | VoD, Offline viewing, STB etc.

**Platforms:** iOS, Android, Windows, CTV.

## Business Outcomes

- Enhanced performance and availability - Recorded 600K concurrent users watching the Formula 1 series live using the OTT app without any glitches
- Improved NPS - 87% increase in overall Net Promoter Score
- Reduced 82% of the testing effort using regression and sanity automation
- Accelerated QA - Parallel execution with 1000+ reusable automated OTT test scenarios for 10+ device types. Exclusive lab setup with over 50 device types

## About Prodapt

Prodapt is the largest and fastest-growing specialized player in the Connectedness industry. With its singular focus on the domain, Prodapt has built deep expertise in the most transformative technologies that connect our world.

Prodapt is a trusted partner for enterprises across all layers of the Connectedness vertical. We design, configure, and operate solutions across their digital landscape, network infrastructure, and business operations - and craft experiences that delight their customers.

Today, our clients connect 1.1 billion people and 5.4 billion devices, and are among the largest telecom, media, and internet firms in the world. Prodapt works with Meta, Google, Amazon, AT&T, Verizon, Vodafone, Liberty Global, Liberty Latin America, Claro, Lumen, Windstream, Rogers, Telus, KPN, Virgin Media, British Telecom, Deutsche Telekom, Cisco, Adtran, Samsung, and many more.

A "Great Place To Work® Certified™" company, Prodapt employs over 6,000 technology and domain experts in 30+ countries across North America, Latin America, Europe, Africa, and Asia. Prodapt is part of the 128-year-old business conglomerate The Jhaver Group, which employs over 30,000 people across 80+ locations globally.

Get in touch to discuss on how to win the streaming wars!

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