TECHNICAL REPORT

Technical report of the streaming platforms system

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Systems Analysis

- ## 1. General Representation of the System

- ***Elements:***

- **Content**: Movies, series, documentaries, live events, etc.
- **Users**: Consumers who access the content via paid subscriptions or free accounts.
- **Content Providers**: Studios, production companies, or independent creators offering their productions.
- **Servers and CDN (Content Delivery Networks)**: Infrastructure that stores and distributes the content globally.
- **Advertisers**: Companies that pay for inserting ads on the platforms (in ad-supported models).
- **Recommendation Systems**: Algorithms that suggest personalized content to users.
- **Regulation and Compliance**: Copyright laws, content licenses, privacy policies.
- **Devices and Platforms**: Compatibility with mobile devices, smart TVs, gaming consoles, web browsers, etc.

- ***Processes (Interactions and Internal Dynamics):***

- **Content streaming and distribution**: Streaming content in real-time or on-demand to users.
- **Content acquisition**: Negotiating and purchasing rights to stream content from studios or creators.
- **Recommendation generation**: Recommendation systems use user data to suggest personalized content.

- **Subscription and payment management**: Handling subscription models, payments, and strategies to retain users.
- **Advertising**: For ad-supported platforms, managing contracts and placing ads strategically within the content.
- **Infrastructure maintenance**: Monitoring and managing servers and networks to ensure high-quality, uninterrupted streaming.

- ***Results:***

- **Subscriber growth**: Increase in the number of paying users.
- **Revenue from subscriptions and ads**: Money generated through subscriptions and advertising.
- **Content quality**: Measuring the success of productions based on views, reviews, etc.
- **User loyalty**: Retention levels and overall user satisfaction with the platform.
- **Technological innovation**: Improvements in streaming quality, load times, and the use of emerging technologies like AI in recommendations.
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- ## 2. Sensitivity Analysis of the Streaming Platform System

- This analysis examines how sensitive different factors in a streaming platform are to external changes:
- **Content availability**:
    - **Sensitivity: High**. The platform's success relies on its content library. If key streaming rights are lost, there could be a significant drop in subscribers.

- **Streaming quality**:
    - **Sensitivity: High**. The user experience depends heavily on video quality and streaming speed. Any server or network issues can severely impact user satisfaction.
- **Pricing models**:
    - **Sensitivity: Medium-High**. Changes in subscription costs can have an immediate impact on user numbers. Higher prices might lead to subscriber loss, while lower prices could attract more users but reduce revenue.
- **Recommendation system**:
    - **Sensitivity: Medium**. Personalized recommendations influence user engagement. Poorly tuned algorithms can reduce user interaction or lead users to abandon the platform.
- **Marketing and advertising investments**:
    - **Sensitivity: High**. A shift in public perception or platform reputation can directly impact the number of subscribers and advertisers interested in the platform.
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3. Complexity Analysis of the Streaming Platform System

- Streaming platforms are highly complex due to the interaction of several factors:
- **Diversity of actors**: Multiple stakeholders are involved, from studios and production companies to users and advertisers. All these actors interact within a connected ecosystem, where a change in one (e.g., a content provider) can have ripple effects across others (e.g., user retention).

- **Unpredictable interactions**: Small changes in content recommendations or user interface designs can have a significant and unpredictable impact on user behavior. User reactions to new features or design changes are hard to forecast.
- **Constant evolution**: Streaming platforms are continually evolving in terms of technology and content. Today's success doesn't guarantee long-term viability, and decisions like content acquisition might reveal their true impact months later.
- **Global competition**: Streaming platforms compete not only locally but in global markets. Competing with giants like Netflix, Disney+, and Amazon Prime Video forces constant innovation in both content and technology.
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4. Emergent Behaviors

- Several emergent behaviors can arise from the interactions between users, algorithms, and content on a streaming platform:
- **Viral recommendations**: Content suggested by the recommendation system can go viral, leading to an unexpected spike in views.
- **Success cycle**: When a platform offers attractive content or produces a hit show, it attracts more users, which generates more revenue to reinvest in new content, creating a positive feedback loop.
- **Market fragmentation**: The increasing number of streaming platforms may fragment the audience, where some users subscribe to multiple platforms simultaneously, while others may drop out due to cost.
- **Impact of binge-watching**: The trend of binge-watching (watching multiple episodes in one sitting) has changed the way content is consumed, pushing platforms to adjust their content release models and availability.