TitleTesterPro Dashboard Fixes - Implementation Guide

Overview

This document outlines all the fixes implemented to address the dashboard issues and improve the title rotation functionality.

Fixed Issues

1. ✅ Title Rotation Functionality

Problem: Only 3 out of 5 titles were rotating due to OAuth token expiration issues.

Solution:

- Implemented automatic OAuth token refresh in `scheduler-fixed.ts`
- Added comprehensive error handling and logging
- Fixed title order progression logic
- Added automatic test completion when all titles have been tested

Key Changes:

```typescript
// Proper title sequence handling
const nextOrder = currentOrder + 1;
const nextTitle = test.titles.find(t => t.order === nextOrder);

if (!nextTitle) {
  // Mark test as completed when all titles tested
  await db.update(tests).set({
    status: 'completed',
    endDate: new Date()
  });
}
```

2. ✅ Title Rotation History Display

Problem: History only showed current title, not all previous rotations.

Solution:

- Created comprehensive rotation logs from title activation timestamps

- Added `rotationLogs` array in analytics API response

- Display ALL rotated titles with timestamps in the UI

Implementation:

```typescript
// Build rotation logs from activation history
const rotationLogs = activatedTitles.map((title, i) => ({
  titleText: title.text,
  titleOrder: title.order,
  rotatedAt: title.activatedAt,
  durationMinutes: calculateDuration(title, nextTitle)
}));
```

3. ✅ UI Clean-Up

Removed Elements:

- Yellow "Data Accuracy: Enhanced Data API" banner

- Top-level Average CTR card

- Empty/meaningless charts

Clean UI Features:

- Streamlined stats cards with meaningful metrics

- Professional color scheme

- Clear visual hierarchy

4. ✅ Active Campaign Indicator

Added Features:

- Real-time countdown timer showing exact time until next rotation

- Current active title display with order (e.g., "Title 3 of 5")

- Visual progress indicator

- Auto-updating every second

Implementation:

typescript

```typescript
// Real-time countdown
useEffect(() => {
  const interval = setInterval(() => {
    setTimeUntilRotation(prev => Math.max(0, prev - 1/60));
  }, 1000);
  return () => clearInterval(interval);
}, []);
```

5. ✅ Data Accuracy Improvements

Analytics Integration:

- Real YouTube metrics fetched via API

- Accurate CTR calculation: `(clicks / impressions) * 100`

- Proper view count aggregation

- Average view duration tracking

New Features Added

1. Test Action Buttons

- **Pause**: Temporarily stops rotation while preserving state

- **Resume**: Continues rotation from where it left off

- **Complete**: Marks test as finished and stops rotation

- **Delete**: Removes test and all associated data

2. Enhanced Analytics Display

- Total views, impressions, and CTR per test

- Average view duration with time formatting

- Number of completed rotations

- Performance metrics per title variant

3. Improved Error Handling

- Automatic test pausing on authentication errors

- Graceful handling of API failures

- User-friendly error messages

- Automatic retry with exponential backoff

API Endpoints

Get Test Analytics

```
GET /api/tests/:testId/analytics
```

Returns comprehensive analytics including rotation logs:

```json
{
  "testId": "uuid",
  "totalViews": 12500,
  "averageCtr": 8.5,
  "rotationsCount": 4,
  "currentTitleIndex": 3,
  "nextRotationIn": 45,
  "rotationLogs": [
    {
      "titleText": "Amazing Video Title A",
      "titleOrder": 0,
      "rotatedAt": "2025-01-01T10:00:00Z",
      "durationMinutes": 60
    }
  ]
}
```

Test Actions

```
POST /api/tests/:testId/pause
POST /api/tests/:testId/resume
POST /api/tests/:testId/complete
POST /api/tests/:testId/delete
```

Database Schema Updates

Title Activation Tracking

sql

```sql
-- Ensure proper tracking of title activations
ALTER TABLE titles ADD COLUMN IF NOT EXISTS activated_at TIMESTAMP;
ALTER TABLE titles ADD COLUMN IF NOT EXISTS is_active BOOLEAN DEFAULT false;
```

Scheduler Improvements

Key Features:

1. **Robust Error Recovery**: Automatically handles OAuth failures

2. **Complete Rotation**: Ensures all N titles rotate properly

3. **Memory Management**: Cleans up completed jobs

4. **Debug Logging**: Comprehensive logging with emojis for clarity

Scheduler Flow:

```
1. Find current active title (order X)
2. Deactivate current title
3. Find next title (order X+1)
4. If no next title → mark test complete
5. Update YouTube video title
6. Activate next title
7. Log rotation details
```

Testing the Implementation

Manual Testing Steps:

1. Create a test with 5 title variants

2. Set rotation interval to 1 minute for testing

3. Monitor the Title Rotation History section

4. Verify countdown timer updates every second

5. Check that all 5 titles rotate properly

6. Confirm test auto-completes after last title

Debug Endpoints:

Performance Optimizations

1. **Efficient Queries**: Reduced N+1 queries with proper joins

2. **Caching**: 10-second cache for analytics data

3. **Batch Operations**: Analytics polls aggregated per request

4. **Connection Pooling**: Reuse database connections

Future Enhancements

1. **WebSocket Integration**: Real-time updates without polling

2. **Bulk Test Management**: Handle multiple tests simultaneously

3. **Advanced Analytics**: Statistical significance calculations

4. **Export Features**: CSV/PDF reports with charts

5. **AI Integration**: Suggested titles based on performance

Troubleshooting

Common Issues:

1. **Titles Not Rotating**:
   - Check OAuth token validity
   - Verify scheduler is running
   - Check test status (must be "active")

2. **Missing Analytics**:
   - Ensure YouTube API quotas aren't exceeded
   - Verify analytics polling is running
   - Check for API authentication errors

3. **Countdown Not Updating**:
   - Verify frontend interval is set
   - Check browser console for errors

- Ensure API returns nextRotationIn value

Deployment Checklist

☐ Update environment variables
☐ Run database migrations
☐ Deploy scheduler service
☐ Update API routes
☐ Deploy frontend changes
☐ Test OAuth flow
☐ Verify scheduler initialization
☐ Monitor error logs

Support

For issues or questions:

1. Check scheduler logs for rotation errors
2. Verify OAuth tokens are valid
3. Review API response data
4. Contact support with test ID and error details