Enhanced Video Hub - Iteration 1 Implementation Summary

Overview

Successfully implemented 3 missing features to complete Iteration 1 of the Enhanced Video Hub for the Mindful Champion platform. All features are fully functional and integrated into the existing media center infrastructure.

Feature 1: Feed Status Monitoring System ✅

Description

Real-time health monitoring for all LiveStream entries with automatic status checks and visual indicators.

Components Created

1. Feed Health Service

- **File**: `/lib/media-center/feed-health-service.ts`
- **Purpose**: Core service for checking stream health and availability
- **Features**:
- YouTube stream verification via oEmbed API
- Connection quality assessment (excellent/good/fair/poor)
- Status caching (2-minute duration) to avoid rate limits
- Support for multiple platforms
- Batch checking for multiple streams

2. Feed Status API Endpoint

- **File**: `/app/api/media-center/feed-status/route.ts`
- **Endpoint**: `GET /api/media-center/feed-status`
- **Query Parameters**:
- `streamIds` (optional): Comma-separated list of stream IDs
- **Response**: Stream health status with timestamps

3. Updated Live Streams Section

- **File**: `/components/media-center/live-streams-section.tsx`
- **New Features**:
- Real-time health status indicators
- Connection quality badges
- Auto-refresh every 2 minutes
- Visual status dots (green=live, gray=offline, yellow=checking, red=error)
- Error message display for problematic streams

Benefits

- Proactive monitoring of stream availability
- Quick identification of broken feeds
- Better user experience with accurate status information
- Reduced support requests for non-working streams

Feature 2: Recent Highlights Carousel ✅

Description

Database-backed carousel showcasing recent pickleball tournament highlights and instructional content.

Components Created

1. Prisma Model

- **File**: `/prisma/schema.prisma`
- **Model**: `RecentHighlight`
- **Fields**:
- `id`, `title`, `videoUrl`, `thumbnail`
- `date`, `tournament`, `location`
- `description`, `channel`, `category`
- `featured`, `viewCount`
- Timestamps: `createdAt`, `updatedAt`
- **Indexes**: `date`, `featured`, `category`

2. Seed Script

- **File**: `/scripts/seed-highlights.ts`
- **Purpose**: Load highlights from JSON data into database
- **Features**:
- Parses `pickleball_media_data.json`
- Handles date range parsing
- Auto-flags championship content as featured
- Reports success/error counts
- **Usage**: `npx tsx scripts/seed-highlights.ts`
- **Result**: Successfully seeded 10 highlights

3. API Endpoint

- **File**: `/app/api/media-center/recent-highlights/route.ts`
- **Endpoint**: `GET /api/media-center/recent-highlights`
- **Query Parameters**:
- `limit` (default: 12): Number of highlights to return
- `category` (optional): Filter by category
- `featured` (optional): Show only featured content
- **Response**: Highlights array with categories list

4. Carousel Component

- **File**: `/components/media-center/recent-highlights-section.tsx`
- **Features**:
- Horizontal scrolling carousel
- Category filtering dropdown
- Navigation arrows (left/right)
- Featured badge for championship content
- Play button overlay on hover
- Thumbnail preview with platform badges
- Tournament, location, and date information
- Click-to-watch functionality (opens in new tab)
- Responsive design with smooth animations

5. Integration

- **File**: `/components/media-center/enhanced-media-center.tsx`
- **Location**: Overview tab, between live sections and bottom row
- **Display**: Full-width carousel with up to 12 highlights

Benefits

- Engaging visual content showcase
- Easy discovery of recent tournaments
- Featured content highlighting
- Category-based filtering
- Professional presentation of video content

Feature 3: Admin Panel for Custom Streams ✅

Description

Complete CRUD interface for admins to manage custom streaming sources that appear alongside regular LiveStream entries.

Components Created

1. Prisma Model

- **File**: `/prisma/schema.prisma`
- **Model**: `CustomStream`
- **Fields**:
- `id`, `title`, `streamUrl`, `thumbnail`
- `platform`, `description`
- `isActive`, `priority`, `createdBy`
- Timestamps: `createdAt`, `updatedAt`
- **Indexes**: `isActive`, `priority`

2. Admin API Endpoint

- **File**: `/app/api/admin/custom-streams/route.ts`
- **Endpoints**:

- `GET` : List all custom streams (with optional `activeOnly` filter)
- `POST` : Create new custom stream
- `PUT` : Update existing stream
- `DELETE` : Remove stream
- **Authorization**: Admin-only access
- **Validation**: Required fields checking

3. Admin Management Page

- **File**: `/app/admin/streams/page.tsx`
- **URL**: `/admin/streams`
- **Features**:
- Stream listing with thumbnails
- Priority management (up/down arrows)
- Active/Inactive toggle
- Edit dialog with full form
- Delete confirmation dialog
- Platform icons (YouTube, PickleballTV, etc.)
- Real-time updates after changes
- Responsive grid layout
- Empty state with call-to-action

Form Fields:
- Title (required)
- Stream URL (required)
- Thumbnail URL
- Platform (dropdown: YouTube, PickleballTV, Twitch, Facebook, Custom)
- Description (textarea)
- Priority (number)
- Status (Active/Inactive)

4. Integration with Media Center

- **File**: `/app/api/media-center/live-streams/route.ts`
- **Changes**:
- Fetches active custom streams from database
- Transforms custom streams to LiveStream format
- Merges custom streams with regular streams
- Custom streams appear first (sorted by priority)
- Returns `customStreamsCount` in response

Benefits

- Admin control over featured content
- Priority-based ordering
- Easy addition of special events
- Platform flexibility
- No code changes needed for new streams
- Seamless integration with existing UI

Database Changes

Migration

- Used `npx prisma db push` to sync schema changes
- Added 2 new models: `RecentHighlight` and `CustomStream`
- All indexes created successfully

Data Seeding

- Loaded 10 recent highlights from JSON
- Ready for admin-created custom streams

Testing & Verification

Completed Tests

✅ Feed health service checks YouTube streams correctly
✅ Feed status API returns accurate data
✅ Live streams section displays status indicators
✅ Recent highlights carousel loads and scrolls
✅ Category filtering works
✅ Admin streams API CRUD operations functional
✅ Admin page loads and renders correctly
✅ Custom streams appear in media center
✅ All Prisma models generated successfully

Integration Points

✅ Media center overview tab shows all features
✅ Custom streams merge with regular streams
✅ Status monitoring works for all stream types
✅ Highlights carousel responsive and smooth

File Structure

```
nextjs_space/
├── app/
│   ├── admin/
│   │   └── streams/
│   │       └── page.tsx                    # Admin management UI
│   └── api/
│       ├── admin/
│       │   └── custom-streams/
│       │       └── route.ts                # CRUD API
│       └── media-center/
│           ├── feed-status/
│           │   └── route.ts                # Health check API
│           ├── recent-highlights/
│           │   └── route.ts                # Highlights API
│           └── live-streams/
│               └── route.ts                # Updated with custom streams
├── components/
│   └── media-center/
│       ├── enhanced-media-center.tsx       # Updated with highlights
│       ├── live-streams-section.tsx        # Updated with status monitoring
│       └── recent-highlights-section.tsx   # New carousel component
├── lib/
│   └── media-center/
│       └── feed-health-service.ts          # Health check service
├── prisma/
│   └── schema.prisma                       # Updated with 2 new models
└── scripts/
    └── seed-highlights.ts                  # Data seeding script
```

API Reference

Feed Status API

```
GET /api/media-center/feed-status?streamIds=id1,id2
Response: {
  success: true,
  timestamp: "2025-12-05T...",
  count: 2,
  streams: [
    {
      streamId: "...",
      title: "...",
      status: "live|offline|checking|error",
      connectionQuality: "excellent|good|fair|poor",
      lastChecked: "2025-12-05T...",
      errorMessage: "..."
    }
  ]
}
```

Recent Highlights API

```
GET /api/media-center/recent-highlights?limit=12&category=...
Response: {
  success: true,
  count: 10,
  highlights: [...],
  categories: ["Professional Singles", "Team Championship", ...]
}
```

Custom Streams Admin API

```
GET /api/admin/custom-streams?activeOnly=true
POST /api/admin/custom-streams
PUT /api/admin/custom-streams
DELETE /api/admin/custom-streams?id=...
```

Usage Instructions

For Administrators

Adding a Custom Stream

1. Navigate to `/admin/streams`
2. Click "Add Stream" button
3. Fill in required fields:
   - Title
   - Stream URL (YouTube, etc.)
   - Platform selection
4. Optional fields:
   - Thumbnail URL
   - Description
   - Priority (higher = appears first)
5. Click "Save"

Managing Streams

- **Toggle Active**: Click the checkmark icon
- **Adjust Priority**: Use up/down arrows
- **Edit**: Click the edit icon
- **Delete**: Click trash icon (requires confirmation)

Adding New Highlights

1. Update `pickleball_media_data.json` with new entries
2. Run: `npx tsx scripts/seed-highlights.ts`
3. Highlights automatically appear in carousel

For Users

- View live streams with real-time status indicators
- Browse recent highlights in the carousel
- Filter highlights by category

- Click any highlight to watch on YouTube
- Custom streams appear seamlessly with regular content

Performance Optimizations

Caching

- Feed status cached for 2 minutes
- Reduces API calls and rate limit concerns
- Automatic cache invalidation on errors

Database Queries

- Indexed fields for fast lookups
- Efficient sorting by priority and date
- Limited query results with pagination support

UI Performance

- Smooth scroll animations
- Lazy loading of thumbnails
- Optimistic UI updates in admin panel

Future Enhancements (Potential)

Feed Monitoring

- [ ] Email alerts for stream failures
- [ ] Historical uptime tracking
- [ ] Webhook notifications

Highlights

- [ ] Video player integration (play inline)
- [ ] View count tracking
- [ ] User favorites/bookmarks
- [ ] Auto-refresh from YouTube RSS

Admin Panel

- [ ] Bulk import streams from CSV
- [ ] Stream analytics dashboard
- [ ] Scheduling system for timed streams
- [ ] Preview mode before publishing

Git Commit

All changes committed with message:

```
feat: Add 3 missing features for Enhanced Video Hub (Iteration 1)

Feature 1: Feed Status Monitoring System
Feature 2: Recent Highlights Carousel
Feature 3: Admin Panel for Custom Streams

All features fully functional and tested.
```

Commit Hash: `ac1c21b`

Conclusion

✅ **All 3 features successfully implemented**
✅ **Fully integrated with existing media center**
✅ **Admin tools functional and secure**
✅ **User experience enhanced with real-time data**
✅ **Database schema updated and seeded**
✅ **Code committed to version control**

The Enhanced Video Hub (Iteration 1) is now complete and ready for production use!

Implementation Date: December 5, 2025
Developer: DeepAgent AI Assistant
Status: ✅ COMPLETE