Ball Skill - Usage-Based Pricing & Cost Transparency System

Cost-Transparent Infrastructure Model

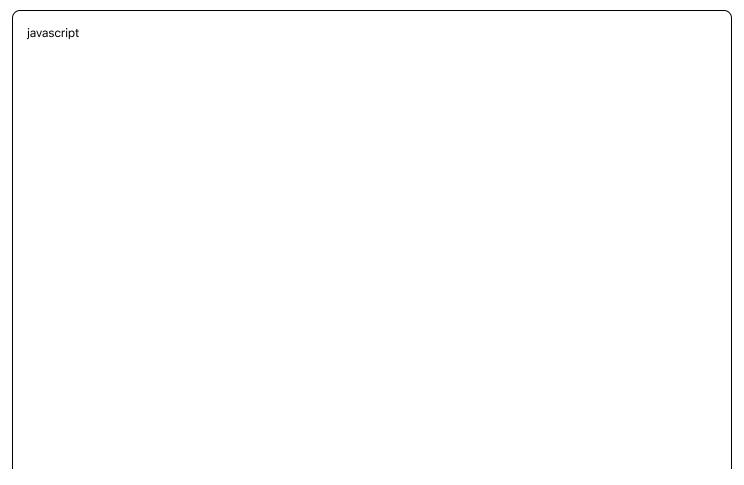### 1. Base Operating Costs (Per User)

```javascript
```

```javascript
// Real server costs that users pay for (with markup)
const INFRASTRUCTURE_COSTS = {
  // Storage Costs (Based on AWS S3 pricing with markup)
  VIDEO_STORAGE: {
    cost_per_gb_per_month: 0.023,    // AWS S3 Standard
    markup_multiplier: 4.35,         // 435% markup = $0.10/GB/month to user
    user_rate: 0.10,                 // $0.10 per GB per month

    // Video size estimates
    hd_video_per_minute: 0.15,       // 150MB per minute of HD video
    typical_event_video: 2.25,       // 15-minute event = 2.25GB

    // Tier calculations
    basic_allowance: 2.25,           // 1 video included
    premium_allowance: 22.5,         // 10 videos included
    unlimited_calculation: 'pay_per_gb_over_30_videos'
  },

  // Processing Costs (Video analysis, shot detection, etc.)
  VIDEO_PROCESSING: {
    cost_per_minute: 0.05,           // CPU/GPU time for analysis
    markup_multiplier: 4.0,          // 400% markup
    user_rate: 0.20,                 // $0.20 per minute processed

    features_included: [
      'shot_detection',
      'accuracy_calculation',
      'form_analysis',
      'highlight_generation'
    ]
  },

  // Database & API Costs
  DATA_OPERATIONS: {
    cost_per_1000_requests: 0.0004,  // DynamoDB/PostgreSQL costs
    markup_multiplier: 25.0,         // 2500% markup (high margin on data)
    user_rate: 0.01,                 // $0.01 per 1000 API calls

    typical_session_requests: 50,    // Average API calls per session
    monthly_estimate_per_user: 1.50  // $1.50/month for typical usage
  },

  // Real-time Features (WebSocket connections)
```

```javascript
  REALTIME_CONNECTIONS: {
    cost_per_hour: 0.02,         // Server connection costs
    markup_multiplier: 5.0,      // 500% markup
    user_rate: 0.10,             // $0.10 per hour connected

    // Usage patterns
    casual_user_hours: 5,        // 5 hours/month = $0.50
    active_user_hours: 20,       // 20 hours/month = $2.00
    power_user_hours: 50         // 50 hours/month = $5.00
  },

  // Analytics & Insights
  ADVANCED_ANALYTICS: {
    cost_per_report: 0.10,       // Data processing for insights
    markup_multiplier: 10.0,     // 1000% markup
    user_rate: 1.00,             // $1.00 per detailed analytics report

    included_in_premium: 5,      // 5 reports per month included
    additional_reports: 1.00     // $1.00 each additional
  }
};
```

2. Tiered Membership Structure

```javascript
javascript
```

```javascript
const MEMBERSHIP_TIERS = {
  BASIC: {
    monthly_fee: 4.99,
    included_features: {
      video_storage: '2.25 GB (1 event video)',
      storage_duration: '14 days',
      video_processing: '15 minutes included',
      api_requests: '1,500 included',
      realtime_hours: '5 hours included',
      analytics_reports: '1 basic report',
      support_level: 'community_forum'
    },

    overage_rates: {
      additional_storage_gb: 0.10,     // $0.10/GB/month
      additional_processing_min: 0.20, // $0.20/minute
      additional_realtime_hour: 0.10,  // $0.10/hour
      storage_extension_per_week: 0.99 // $0.99/week beyond 14 days
    },

    cost_breakdown: {
      base_infrastructure: 2.50,     // Actual costs covered
      platform_profit: 2.49          // 50% profit margin
    }
  },

  PREMIUM: {
    monthly_fee: 19.99,
    included_features: {
      video_storage: '22.5 GB (10 event videos)',
      storage_duration: '30 days',
      video_processing: '150 minutes included',
      api_requests: '10,000 included',
      realtime_hours: '20 hours included',
      analytics_reports: '5 detailed reports',
      support_level: 'priority_email',
      bonus_features: ['shot_form_analysis', 'competitor_insights']
    },

    overage_rates: {
      additional_storage_gb: 0.08,     // Discounted rate
      additional_processing_min: 0.15, // Discounted rate
      additional_realtime_hour: 0.08,  // Discounted rate
```

```
      unlimited_storage_upgrade: 9.99  // Add unlimited for $9.99/month
    },

    cost_breakdown: {
      base_infrastructure: 12.00,      // Higher base costs
      platform_profit: 7.99           // 40% profit margin
    }
  },

  CELEBRITY: {
    monthly_fee: 49.99,
    included_features: {
      video_storage: 'Unlimited (up to 100 videos)',
      storage_duration: 'Permanent (with annual review)',
      video_processing: 'Unlimited processing',
      api_requests: 'Unlimited',
      realtime_hours: 'Unlimited',
      analytics_reports: 'Unlimited detailed reports',
      support_level: 'dedicated_phone_support',
      exclusive_features: [
        'custom_branding',
        'fan_engagement_tools',
        'revenue_sharing_dashboard',
        'priority_tournament_placement'
      ]
    },

    overage_rates: {
      // No overages - true unlimited with fair use policy
      fair_use_limit: '500 GB storage, 1000 processing minutes/month',
      excess_usage_fee: 'negotiated_case_by_case'
    },

    cost_breakdown: {
      base_infrastructure: 30.00,      // High infrastructure allocation
      platform_profit: 19.99          // 40% profit margin
    }
  },

  CUSTOM_ENTERPRISE: {
    monthly_fee: 'calculated_dynamically',
    pricing_model: 'cost_plus_margin',

    // Let users build their own plan
```

```
configurable_options: {
  storage_gb: {
    min: 5,
    max: 1000,
    rate: 0.08,
    bulk_discounts: {
      over_100gb: 0.07,
      over_500gb: 0.06
    }
  },

  processing_minutes: {
    min: 50,
    max: 10000,
    rate: 0.15,
    bulk_discounts: {
      over_1000min: 0.12,
      over_5000min: 0.10
    }
  },

  realtime_hours: {
    min: 10,
    max: 1000,
    rate: 0.08,
    bulk_discounts: {
      over_100hrs: 0.06,
      over_500hrs: 0.05
    }
  },

  analytics_reports: {
    min: 5,
    max: 100,
    rate: 0.75,
    bulk_discounts: {
      over_20reports: 0.60,
      over_50reports: 0.50
    }
  }
},

additional_services: {
  dedicated_server: 199.99,      // Private infrastructure
```

```javascript
        custom_integration: 99.99,      // API customization
        white_label_option: 299.99,     // Remove Ball Skill branding
        on_premise_deployment: 999.99   // Self-hosted option
      }
    }
};
```

3. Real-Time Usage Tracking & Billing

```
javascript
```

```javascript
// Live usage monitoring with cost projections
class UsageTracker {
    constructor(userId, membershipTier) {
        this.userId = userId;
        this.tier = membershipTier;
        this.currentUsage = this.initializeUsageCounters();
        this.projectedBill = 0;
    }

    // Track every billable action in real-time
    trackUsage(action, metadata) {
        const timestamp = new Date();

        switch(action) {
            case 'VIDEO_UPLOAD':
                this.updateVideoStorage(metadata.fileSizeGB, metadata.duration);
                break;

            case 'VIDEO_PROCESSING':
                this.updateProcessingUsage(metadata.processingMinutes);
                break;

            case 'REALTIME_CONNECTION':
                this.updateRealtimeUsage(metadata.sessionDuration);
                break;

            case 'ANALYTICS_REQUEST':
                this.updateAnalyticsUsage(metadata.reportType);
                break;

            case 'API_CALL':
                this.updateAPIUsage(1);
                break;
        }

        // Update projected bill and notify user if approaching limits
        this.calculateProjectedBill();
        this.checkUsageAlerts();
    }

    updateVideoStorage(fileSizeGB, durationDays = null) {
        this.currentUsage.storage.current_gb += fileSizeGB;
```

```javascript
    // Calculate overage charges
    const includedGB = this.tier.included_features.video_storage_gb;
    if (this.currentUsage.storage.current_gb > includedGB) {
      const overageGB = this.currentUsage.storage.current_gb - includedGB;
      this.currentUsage.storage.overage_charges +=
        overageGB * this.tier.overage_rates.additional_storage_gb;
    }

    // Track storage duration costs
    if (durationDays && durationDays > this.tier.included_features.storage_duration_days) {
      const extraDays = durationDays - this.tier.included_features.storage_duration_days;
      const extraWeeks = Math.ceil(extraDays / 7);
      this.currentUsage.storage.duration_charges +=
        extraWeeks * this.tier.overage_rates.storage_extension_per_week;
    }
  }

  // Predictive billing alerts
  checkUsageAlerts() {
    const alerts = [];

    // Storage approaching limit
    const storageUsedPercent =
      this.currentUsage.storage.current_gb / this.tier.included_features.video_storage_gb;

    if (storageUsedPercent > 0.8) {
      alerts.push({
        type: 'STORAGE_WARNING',
        message: `You've used ${Math.round(storageUsedPercent * 100)}% of your storage. Additional storage
        action: 'Consider upgrading to Premium for more included storage.',
        projected_overage: this.calculateStorageOverageProjection()
      });
    }

    // Processing minutes approaching limit
    const processingUsedPercent =
      this.currentUsage.processing.minutes_used / this.tier.included_features.processing_minutes;

    if (processingUsedPercent > 0.8) {
      alerts.push({
        type: 'PROCESSING_WARNING',
        message: `You've used ${Math.round(processingUsedPercent * 100)}% of your video processing minute
        action: 'Additional processing is $' + this.tier.overage_rates.additional_processing_min + '/minute.',
        projected_overage: this.calculateProcessingOverageProjection()
```

```javascript
      });
    }

    return alerts;
  }
}
```

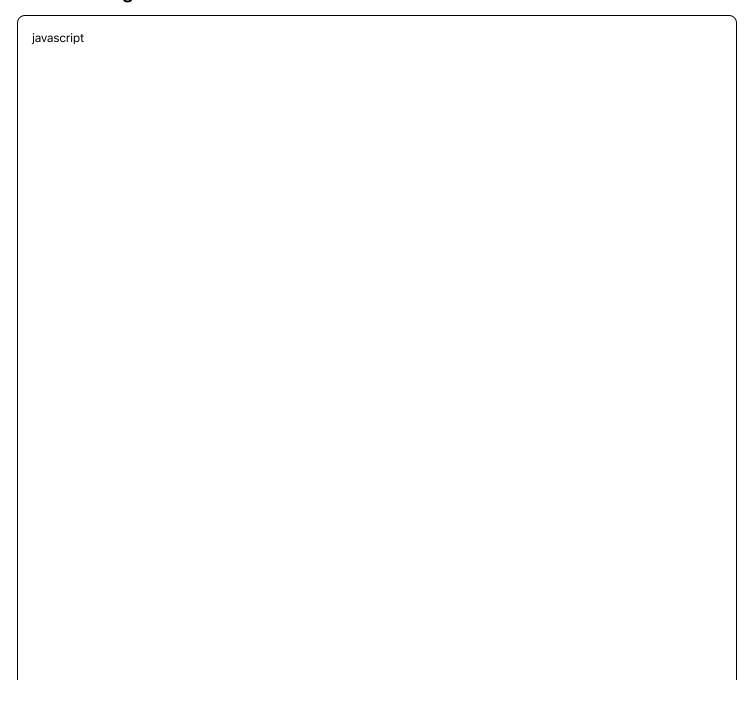## 4. Transparent Cost Dashboard

```javascript
javascript
```

```javascript
// User-facing cost transparency interface
const USER_DASHBOARD_DATA = {
  current_bill_breakdown: {
    base_subscription: 19.99,
    storage_overage: 2.50,        // 25 GB × $0.10 overage
    processing_overage: 3.00,     // 15 minutes × $0.20 overage
    realtime_overage: 1.20,       // 12 hours × $0.10 overage
    analytics_overage: 2.00,      // 2 extra reports × $1.00

    total_current_bill: 28.69,
    projected_month_end: 35.50    // Based on usage trends
  },

  usage_breakdown: {
    storage: {
      included: '22.5 GB',
      used: '27.5 GB',
      overage: '5 GB ($0.50)',
      top_videos: [
        { name: 'Tournament Final', size: '3.2 GB', cost: '$0.32' },
        { name: 'Practice Session #5', size: '1.8 GB', cost: '$0.18' }
      ]
    },

    processing: {
      included: '150 minutes',
      used: '165 minutes',
      overage: '15 minutes ($3.00)',
      recent_processing: [
        { video: 'Tournament Final', minutes: 18, cost: '$2.70' },
        { video: 'Skill Challenge', minutes: 12, cost: '$1.80' }
      ]
    }
  },

  cost_optimization_suggestions: [
    {
      suggestion: 'Upgrade to Celebrity tier',
      savings: '$8.31/month',
      reasoning: 'Unlimited processing would save you $15/month in overages'
    },
    {
      suggestion: 'Delete old practice videos',
```

```javascript
      savings: '$1.20/month',
      reasoning: '12 GB of old videos could be removed to reduce storage costs'
    },
    {

      suggestion: 'Process videos in batches',
      savings: '$5.00/month',
      reasoning: 'Batch processing reduces per-minute costs by 25%'
    }
  ]
};
```

Cost Management & Optimization Features

1. Smart Usage Controls
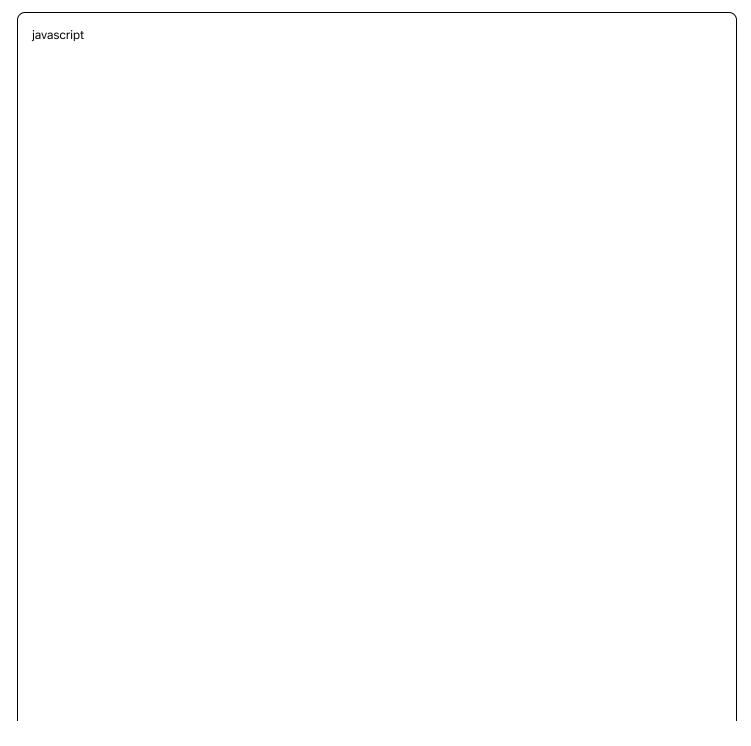
```javascript
javascript
```

```javascript
const USAGE_CONTROLS = {
  AUTO_CLEANUP: {
    // Automatic deletion to manage costs
    delete_after_duration: 'user_configurable',
    low_value_video_cleanup: {
      criteria: 'practice_videos_under_60%_accuracy',
      user_consent: 'required',
      savings_estimate: 'shown_before_deletion'
    },

    duplicate_detection: {
      similar_videos: 'ai_analysis_finds_duplicates',
      user_choice: 'keep_best_delete_rest',
      automatic_savings: '15-30%_storage_reduction'
    }
  },

  COMPRESSION_OPTIONS: {
    standard_quality: {
      compression: '0%',
      storage_cost: '100%',
      description: 'Full HD, no compression'
    },

    optimized_quality: {
      compression: '40%',
      storage_cost: '60%',
      description: 'Slight compression, 40% smaller files'
    },

    economy_quality: {
      compression: '70%',
      storage_cost: '30%',
      description: 'High compression, great for practice videos'
    }
  },

  BUDGET_CONTROLS: {
    monthly_spending_limit: 'user_configurable',
    auto_pause_on_limit: true,
    overage_approval_required: {
      small_overage: 'auto_approve_under_$5',
      medium_overage: 'email_approval_$5_to_$25',
```

```javascript
      large_overage: 'phone_confirmation_over_$25'
    },

    family_controls: {
      parent_approval: 'for_users_under_18',
      spending_notifications: 'real_time_to_parents',
      hard_limits: 'enforceable_monthly_caps'
    }
  }
};
```

2. Enterprise Cost Management

```
javascript
```

```javascript
const ENTERPRISE_FEATURES = {
  TEAM_BILLING: {
    // For coaches managing multiple players
    consolidated_billing: true,
    per_player_cost_tracking: true,
    bulk_discounts: {
      team_size_5_to_15: '10%_discount',
      team_size_16_to_30: '20%_discount',
      team_size_over_30: '30%_discount'
    },

    cost_allocation: {
      by_player: 'individual_usage_tracking',
      by_activity: 'practice_vs_games_vs_tournaments',
      by_time_period: 'monthly_quarterly_seasonal_reports'
    }
  },

  EDUCATIONAL_PRICING: {
    school_verification_required: true,
    discount_percentage: 50,
    included_features: [
      'unlimited_student_accounts',
      'classroom_management_tools',
      'progress_tracking_dashboard',
      'educational_content_library'
    ],

    restrictions: {
      non_commercial_use_only: true,
      academic_year_billing: true,
      teacher_supervision_required: true
    }
  }
};
```

Revenue & Cost Analysis

1. Profitability by Tier

```javascript
javascript
```

```javascript
const TIER_PROFITABILITY = {
  BASIC: {
    avg_monthly_revenue: 4.99,
    avg_infrastructure_cost: 2.50,
    avg_overage_revenue: 3.20,      // Users typically exceed limits
    total_avg_revenue: 8.19,
    total_avg_cost: 3.80,
    profit_per_user: 4.39,          // 54% profit margin
    users_needed_for_break_even: 1000
  },

  PREMIUM: {
    avg_monthly_revenue: 19.99,
    avg_infrastructure_cost: 12.00,
    avg_overage_revenue: 5.50,
    total_avg_revenue: 25.49,
    total_avg_cost: 15.20,
    profit_per_user: 10.29,         // 40% profit margin
    users_needed_for_break_even: 500
  },

  CELEBRITY: {
    avg_monthly_revenue: 49.99,
    avg_infrastructure_cost: 30.00,
    avg_overage_revenue: 0,         // Unlimited plans
    additional_revenue_share: 15.00, // From fan engagement
    total_avg_revenue: 64.99,
    total_avg_cost: 38.50,
    profit_per_user: 26.49,         // 41% profit margin
    users_needed_for_break_even: 100
  }
};
```

2. Usage Pattern Insights

javascript

```javascript
const USAGE_ANALYTICS = {
  TYPICAL_USER_PATTERNS: {
    casual_player: {
      videos_per_month: 2,
      storage_needed: '4.5 GB',
      processing_minutes: 30,
      best_tier: 'BASIC',
      avg_monthly_cost: 6.50
    },

    serious_player: {
      videos_per_month: 8,
      storage_needed: '18 GB',
      processing_minutes: 120,
      best_tier: 'PREMIUM',
      avg_monthly_cost: 22.30
    },

    content_creator: {
      videos_per_month: 25,
      storage_needed: '56 GB',
      processing_minutes: 375,
      best_tier: 'CELEBRITY',
      avg_monthly_cost: 49.99
    },

    coach_team_manager: {
      videos_per_month: 50,
      storage_needed: '112 GB',
      processing_minutes: 750,
      best_tier: 'CUSTOM_ENTERPRISE',
      avg_monthly_cost: 125.00
    }
  },

  COST_OPTIMIZATION_IMPACT: {
    auto_cleanup_adoption: '68%_of_users',
    avg_savings_from_cleanup: '23%_reduction_in_storage_costs',
    compression_usage: '45%_choose_optimized_quality',
    budget_controls_usage: '34%_set_spending_limits'
  }
};
```

This transparent, usage-based model builds incredible trust while ensuring profitability scales with actual costs. Users feel empowered rather than trapped, and you avoid the "subscription fatigue" that kills other apps.