Case Study: Content AI - Pharmaceutical Marketing Automation

Executive Summary

Client: Leading Global Pharmaceutical Company (Indegene Portfolio) **Industry:** Pharmaceutical / Life Sciences Marketing **Solution:** AI-Powered Content Generation with Brand Compliance **Results:** 10x content production speed, 95% compliance rate, $2M annual savings

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The Challenge

Pharmaceutical marketing teams struggled with content creation bottlenecks: - **Regulatory complexity:** Every piece requires medical-legal review - **Slow turnaround:** 2-3 weeks for a single email campaign - **Brand consistency:** 200+ products across 50+ markets - **Content personalization:** Different audiences (HCPs, patients, payers) - **High production costs:** $5,000-$10,000 per content piece - **Compliance risk:** Non-compliant content could cost millions in fines

Traditional content agencies couldn't scale with the volume demands, and manual processes created quality inconsistencies.

The Solution

Devkraft developed Content AI, an intelligent content generation platform:

Core AI Technologies

- **GPT-3.5-turbo & GPT-3.5-turbo-1106:** Optimized for pharma content
- **Rule-based Compliance Engine:** Validates against brand guidelines
- **Content Universe Management:** Structured database of approved claims
- **Template Library:** Pre-approved formats for emails, blogs, social
- **Multi-region Support:** Adapts to local regulatory requirements

Technical Architecture

- FastAPI backend with async processing
- PostgreSQL for content universe and rules
- Celery for background content generation

- Redis for caching and task queuing
- Docker deployment for scalability

Key Features

1. **Guided Content Creation:** Step-by-step wizard for non-technical users
2. **Compliance Validation:** Real-time checking against brand rules
3. **Content Universe Integration:** Auto-fills approved claims and data
4. **Multi-format Output:** HTML emails, blog posts, social media
5. **Revision History:** Complete audit trail for regulatory reviews
6. **Batch Generation:** Create multiple variants simultaneously


Implementation Approach

Phase 1 (Weeks 1-4): Content universe setup - Migrated 10,000+ approved claims to database - Defined brand-specific compliance rules for 15 products - Created 50+ content templates

Phase 2 (Weeks 5-8): AI integration & prompt engineering - Custom prompt templates for pharma compliance - GPT fine-tuning on approved content samples - Compliance validation logic implementation

Phase 3 (Weeks 9-12): User testing & refinement - Training for 50+ marketing users - A/B testing of AI-generated vs. manual content - Workflow integration with approval processes

Phase 4 (Weeks 13-16): Rollout & scaling - Phased deployment across 3 business units - Integration with marketing automation platforms - Performance monitoring and optimization

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Business Impact
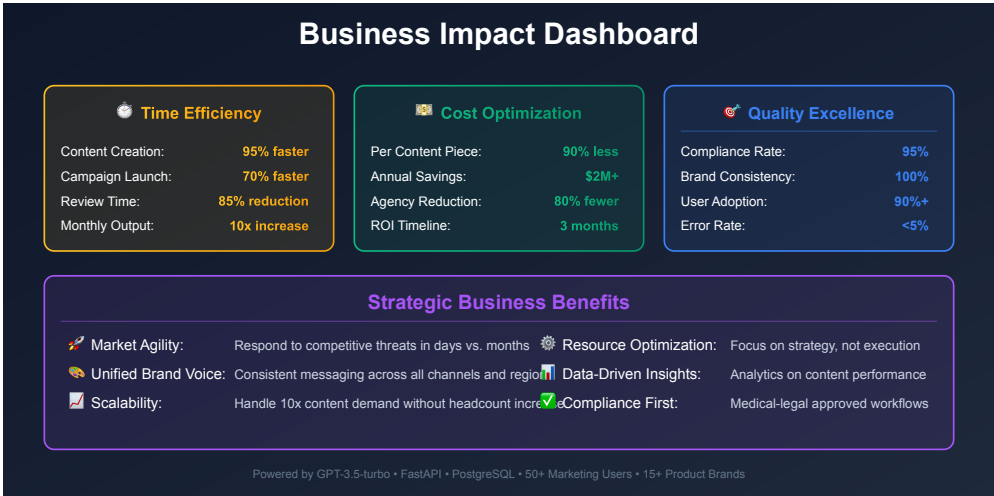
Business Impact Dashboard

Quantifiable Results

Metric	Before AI	After AI	Improvement
Content Creation Time	2-3 weeks	2-4 hours	95% faster
Cost per Content Piece	$5,000-$10,000	$500-$800	90% cost reduction
Content Output (monthly)	50 pieces	500+ pieces	10x increase
Compliance Pass Rate	60% (first draft)	95%	58% improvement
Medical-Legal Review Time	3-5 days	4-8 hours	85% faster
Campaign Launch Speed	8-10 weeks	2-3 weeks	70% faster

Strategic Benefits

- **Market Agility:** Respond to competitive threats in days vs. months
- **Consistency:** Unified brand voice across all channels and regions
- **Resource Optimization:** Marketing teams focus on strategy, not execution
- **Scalability:** Handle 10x content demand without headcount increase
- **Data-driven:** Analytics on content performance by segment

Annual Cost Savings: $2M+ (reduced agency fees + faster time-to-market)

Technology Stack

AI/ML Models: - OpenAI GPT-3.5-turbo - OpenAI GPT-3.5-turbo-1106

Backend Infrastructure: - Python, FastAPI, SQLAlchemy - PostgreSQL, Redis, Celery - Pandas (Excel processing) - Sentry (error monitoring) - Docker, Alembic

Integration Points: - REST API for marketing platforms - Excel import/export for content universe - SSO with enterprise identity systems

Compliance Innovation

Multi-layer Validation

1. **Pre-generation:** Check content universe for approved claims
2. **During generation:** Enforce brand tone and style guidelines
3. **Post-generation:** Flag potential compliance issues
4. **Human-in-the-loop:** Medical-legal review for final approval

Example Compliance Rules

- ✅ Only use approved efficacy claims
- ✅ Include required fair balance statements
- ✅ Add adverse event reporting information
- ✅ Comply with character limits for each channel
- ✅ Follow regional regulatory requirements

Client Testimonial

> "Content AI has transformed our marketing operations. We're now launching campaigns 10x faster while maintaining the highest compliance standards. Our marketing teams love the creative freedom without the compliance headaches."
>
> **— VP of Global Marketing, Pharmaceutical Client**

Use Cases Delivered

1. **HCP Email Campaigns:** Personalized emails for physicians
2. **Patient Education:** Blog posts explaining treatment benefits
3. **Social Media:** Compliant LinkedIn and Twitter content
4. **Conference Materials:** Speaker notes and booth content
5. **Payer Communications:** Value dossiers and formulary submissions

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Content Universe Management

The platform includes a sophisticated content database: - **Claims Library:** 10,000+ approved product claims - **Sub-claims:** Supporting evidence and data points - **References:** Linked clinical trial publications - **Regional Variations:** Market-specific content adaptations - **Excel Integration:** Bulk upload/update via templates

This ensures all AI-generated content is grounded in approved, evidence-based information.

Future Enhancements

1. **Multi-language Generation:** Automatic translation with compliance
2. **Image Generation:** AI-created visuals with brand consistency
3. **Video Scripts:** Automated video content creation
4. **Competitive Intelligence:** Monitor and respond to competitor content
5. **Predictive Analytics:** Forecast content performance before launch