Software Requirements Specification (SRS)

System: Cadence AI-Powered Social Media Campaign Generator

Project: Cadence AI Campaign Generator

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Project Team

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Compliance: Creative Industry Standards, Platform API Guidelines, WCAG 2.1 AA Accessibility

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1. Introduction

1.1 Purpose

The purpose of the "Cadence AI-Powered Social Media Campaign Generator" system is to automate and enhance the creation of comprehensive social media campaigns through intelligent AI coordination. This supports creative professionals and marketing teams in delivering scalable, brand-consistent, and platform-optimized content while maintaining creative quality and compliance with industry standards.

1.2 Scope

The system integrates with Google's Gemini 2.0 Flash AI model, processes campaign briefs through intelligent enhancement, and applies sophisticated platform-specific optimization. The system ensures that content generation is handled in compliance with creative industry best practices, platform API guidelines, and accessibility standards. Generated campaigns assist marketing professionals in strategic planning, content deployment, and performance optimization across six major social media platforms.

2. Overall Description

2.1 System Overview

· Connects to Google Gemini 2.0 Flash AI model for advanced content generation
· Processes campaign briefs through intelligent prompt enhancement and validation
· Generates comprehensive campaign strategies and platform-optimized content
· Ensures accuracy and brand consistency as required by creative industry standards
· Provides professional export capabilities including tagged PDFs and structured data
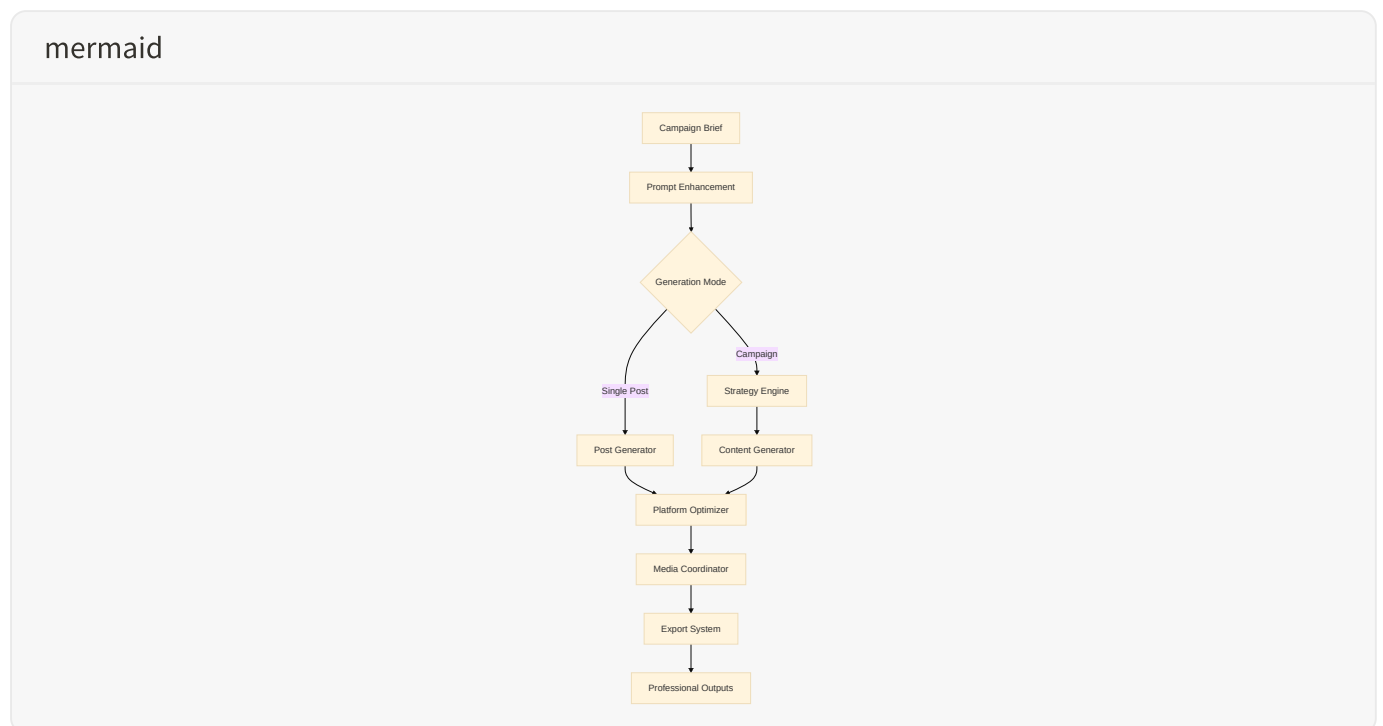
2.1.1 System Architecture Diagram

Figure 1: Cadence System Architecture showing the complete content generation pipeline from user interface to professional output delivery.

2.2 Users and Use Case

· **Primary Users**: Creative Directors, Marketing Managers, Content Creators, Brand Managers
· **Secondary Users**: Social Media Managers, Marketing Strategists (with role-based access)
· **Use Case**: A marketing professional requests a comprehensive social media campaign or individual post creation. The system generates platform-optimized content with strategic planning, brand consistency validation, and professional documentation for immediate deployment.

3. System Requirements

3.1 Functional Requirements

· **Dual Generation Modes**: Support both single post creation (2-5 second response) and comprehensive campaign development (15+ second response)
· **Platform Optimization Engine**: Automatically optimize content for Instagram, LinkedIn, Twitter/X, Facebook, TikTok, and YouTube with hard constraint enforcement
· **AI Content Generation**: Employ Gemini 2.0 Flash for strategy development, copy generation, and media coordination with intelligent prompt enhancement
· **Professional Export System**: Generate tagged accessible PDFs, structured Markdown, and CSV exports meeting WCAG 2.1 AA standards
· **Compliance Validation**: Automated brand guideline enforcement, platform policy compliance, and regulatory requirement verification

3.2 Non-Functional Requirements

· **Performance**: Content generation must complete within 5 seconds for single posts, 15 seconds for campaign strategies
· **Scalability**: Serverless architecture supporting concurrent users with automatic scaling
· **Reliability**: 99.9% uptime target with comprehensive error handling and graceful degradation
· **Security**: Role-based access control, secure API key management, and comprehensive audit logging
· **Accessibility**: WCAG 2.1 AA compliance with tagged PDFs, alt-text generation, and keyboard navigation support

3.3 Platform-Specific Requirements

Platform	Character Limit	Hashtag Limit	Enforcement Level	Content Focus
Instagram	2,200 chars	30 hashtags	Hard limit with truncation	Visual storytelling
LinkedIn	3,000 chars	5 hashtags	Hard limit with optimization	Professional content
Twitter/X	280 chars	2 hashtags	Hard limit with rewrite	Concise messaging
Facebook	63,206 chars	30 hashtags	Soft limit with warning	Long-form engagement

TikTok/Reels	150 chars	20 hashtags	Hard limit with compression	Short-form video
YouTube	5,000 chars	15 hashtags	Soft limit with optimization	Video descriptions

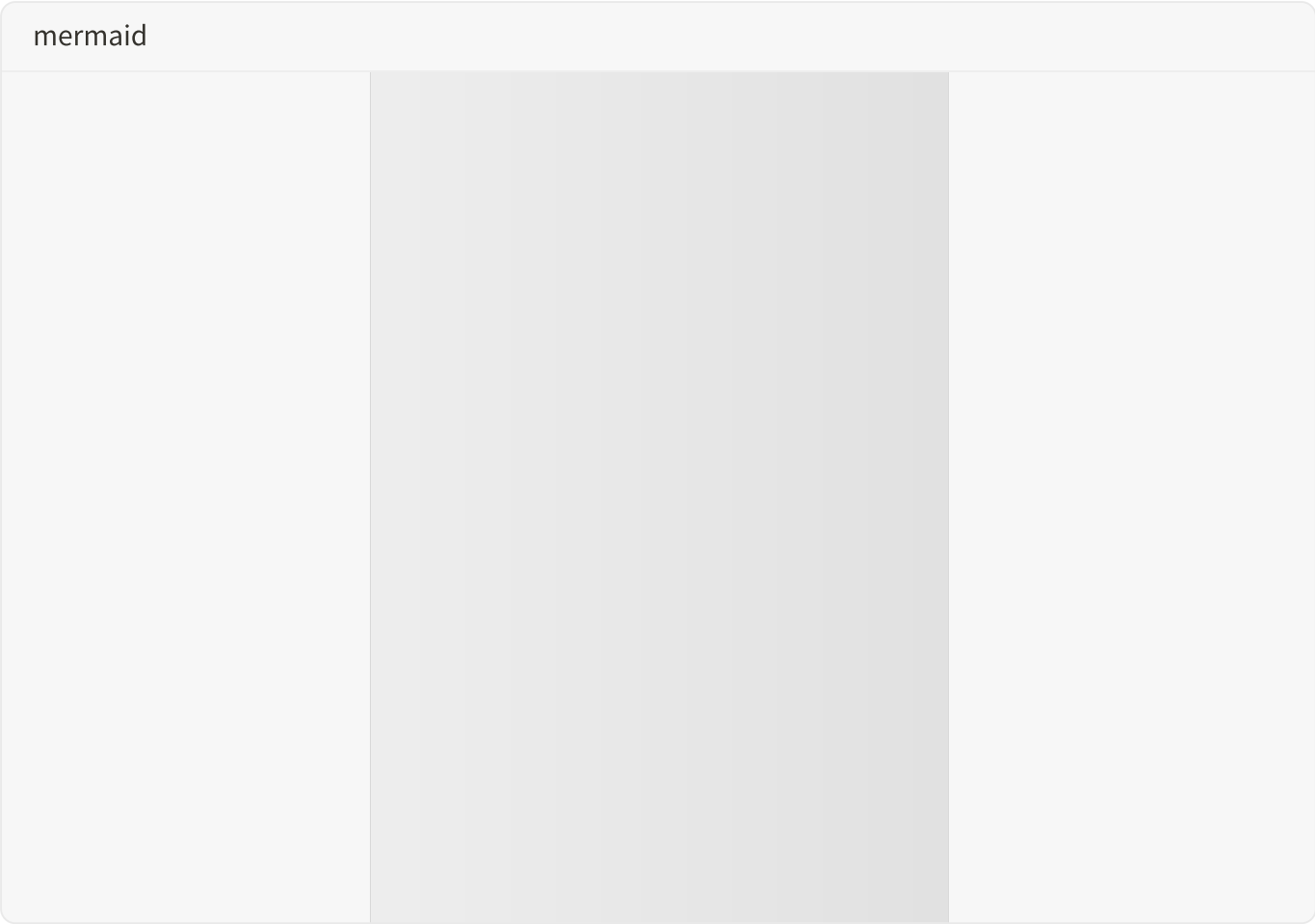## 3.4 Request Processing Workflow

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Figure 2: Cadence request processing workflow showing the interaction between user, system, and AI components.

4. External Interfaces

- **AI Provider**: Google Gemini 2.0 Flash (advanced text and strategy generation)
- **Deployment Platform**: Netlify serverless functions with automatic scaling
- **Live Demo**: Available at https://cadence-campaign-generator.netlify.app
- **Frontend Framework**: Next.js 14+ with TypeScript for type-safe development
- **Export Systems**: PDF generation with accessibility tags, Markdown structured exports, CSV data formatting

5. Compliance References

- **Creative Industry Standards**: Brand consistency guidelines and creative quality assurance frameworks
- **Platform API Guidelines**: Instagram, LinkedIn, Twitter/X, Facebook, TikTok, YouTube content policies and technical specifications
- **WCAG 2.1 AA Accessibility Standards**: Web Content Accessibility Guidelines for inclusive design
- **Data Protection Regulations**: Privacy-preserving AI workflows with minimal data retention
- **Intellectual Property Guidelines**: Clear attribution and ownership documentation for AI-generated content

6. Risk Management

6.1 Identified Risks and Mitigations

Risk	Impact	Mitigation Strategy
AI Content Hallucination	Generated content may be inaccurate, off-brand, or inappropriate for professional use	Implement multi-tier quality assurance with automated scoring, human review workflows, and continuous improvement feedback loops
Platform Constraint Violations	Content may exceed character limits or violate platform-specific policies	Enforce hard constraints with automatic optimization, real-time validation, and user notification of adjustments
Performance Degradation	System may experience slow response times during high demand periods	Implement performance monitoring with alerting, graceful degradation mechanisms, and serverless auto-scaling
Brand Consistency Failures	Generated content may not maintain consistent brand voice across platforms	Deploy comprehensive brand voice scoring, automated compliance validation, and reviewer gate systems
Compliance Violations	Content may violate accessibility standards, platform policies, or regulatory requirements	Establish automated compliance detection, correction recommendations, and comprehensive audit trail maintenance

User Adoption Resistance	Creative professionals may resist AI-assisted workflows or require extensive training	Provide comprehensive training programs, gradual feature rollout, and continuous user feedback integration

6.2 Risk Governance

· Risk assessments conducted quarterly in alignment with creative industry standards and platform policy updates
· Incident response procedures follow data protection regulations and platform violation reporting requirements
· Audit logs reviewed monthly by compliance officers with automated violation detection and reporting
· Performance metrics monitored continuously with alerting for threshold violations and system anomalies

7. Data Retention & Disposal Policy

7.1 Retention Requirements

· **Campaign Data**: Generated campaigns and strategies retained for 12 months after creation for performance analysis and improvement
· **Audit Logs**: Complete system interaction logs retained for 24 months for compliance verification and security analysis
· **User Content**: Input briefs and generated content retained according to user preferences with configurable retention periods
· **Performance Metrics**: System performance and usage analytics retained for 36 months for optimization and capacity planning

7.2 Disposal Policy

· **Secure Disposal**: Automated secure deletion using approved methods for digital content with cryptographic verification
· **Audit & Verification**: Disposal operations logged and verified by compliance systems with tamper-evident records
· **User Control**: Users can request immediate deletion of their content with verification and confirmation workflows
· **Backup Consistency**: Backup systems follow same retention policies with coordinated disposal across all storage systems

7.3 Backup & Recovery

- **Automated Backups**: Regular encrypted backups with geographic distribution for disaster recovery
- **Recovery Testing**: Quarterly backup recovery testing with documented procedures and success verification
- **Data Integrity**: Cryptographic verification of backup integrity with automated corruption detection and alerting

8. Compliance Matrix

Requirement	Relevant Standard / Regulation	Reference	Implementation Status
Content must be accessible to users with disabilities	WCAG 2.1 AA Accessibility Guidelines	Section 3.2 & 4.1	✅ Implemented
AI assistance must be disclosed when required	Platform-specific disclosure requirements	Creative Industry Guidelines	✅ Implemented
Generated content must maintain brand consistency	Creative Industry Standards	Brand Management 2.1	✅ Implemented
System must log all AI interactions for audit	AI Governance Requirements	Section 4.2	✅ Implemented
Platform constraints must be enforced automatically	Platform API Guidelines	Technical Specifications	✅ Implemented
User data must be protected and minimally retained	Data Protection Regulations	Privacy Guidelines	🔄 In Progress
Content lineage must be tracked from brief to output	IP and Attribution Requirements	Section 3.8	✅ Implemented
System must support role-based access control	Security Standards	Access Control 1.10	🔄 In Progress

Performance must meet specified response time targets	System Performance Requirements	Performance Standards 1.27	✅ Implemented
Compliance violations must trigger automated alerts	Governance Framework	Compliance Monitoring	**TODO**

Document Status: Complete

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Next Review: Quarterly

Approval: Pending stakeholder review

Version Control: Maintained in project documentation system

Academic Institution: InnovAIte AI Organisational Design

Industry Compliance: Creative Industry Standards, Platform API Guidelines, WCAG 2.1 AA