Project Document: Content Repurposing Automation System

1. Project Overview

This project is a **content repurposing automation system** built using **n8n**, **OpenAI**, **Airtable**, and a **Vercel-hosted frontend**. The system takes a single keyword from a web interface and automatically generates a full blog post along with platform-specific social media content. All generated content is stored in Airtable and returned to the frontend in real time.

The primary goal is to eliminate manual content repurposing by automating the entire workflow from keyword input to multi-platform output.

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2. System Architecture

High-Level Flow

1. User enters a keyword on the frontend UI
2. Frontend sends the keyword to an n8n webhook
3. n8n normalizes input and enriches it with company context
4. OpenAI generates:
5. Long-form blog content
6. Twitter/X thread
7. LinkedIn post
8. Facebook post
9. Instagram caption
10. All outputs are saved to Airtable
11. Final structured data is returned to the frontend
12. Frontend renders the content in cards with copy functionality

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3. Frontend Details

Technology

- Static HTML, CSS, JavaScript
- Hosted on Vercel
- Connected directly to n8n via webhook

Key Features

- Keyword input field

- Loading state during generation
- Success and error handling
- Card-based UI for each platform
- Word and character count per platform
- Copy-to-clipboard functionality

Webhook Payload Structure

The frontend sends the keyword in the following JSON format:

```
{
  "query": {
    "keyword": "user entered keyword"
  }
}
```

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4. n8n Workflow Design

Core Nodes and Responsibilities

1. Webhook

- Entry point for frontend requests
- Receives keyword inside request body

2. Set – Keyword Fix

- Normalizes incoming data
- Extracts keyword from request body

```
keyword = $json.body.query.keyword
```

This step ensures the keyword is available as `$json.keyword` throughout the workflow.

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3. Get Company Profile (Airtable)

- Fetches company-specific context such as:
- Company name
- Services
- Target audience
- Tone and positioning
- Geographic focus

This ensures AI-generated content is brand-aware.

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4. Set – Company Knowledge Block

- Consolidates company data into a single structured text block
- Used as context for AI content generation

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5. AI – Blog Generator

- Uses OpenAI to generate a complete blog post
- Input includes:
- Normalized keyword
- Company knowledge block
- Content rules enforce:
- Practical tone
- Clear headings
- No emojis
- Human-readable structure

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6. Set – Store Blog

- Extracts the blog text from the OpenAI response
- Stores it as `blog_content` for reuse

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7. Social Media AI Nodes

Each platform has a dedicated AI node:

- AI – X Thread
- AI – LinkedIn Post
- AI – Facebook Post
- AI – Instagram Post

All nodes reuse the blog content and apply platform-specific writing rules.

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8. Merge Node

- Combines outputs from all social media AI nodes
- Ensures a single unified data object

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9. Airtable – Save Final Content

Saves the following fields:

- Keyword
- Blog content
- Twitter/X thread
- LinkedIn post
- Facebook post
- Instagram caption
- Usage flag

This creates a permanent content archive.

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10. Edit Fields

- Cleans and reshapes Airtable output
- Prepares final response format

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11. Respond to Webhook

- Returns generated content to the frontend
- Includes proper CORS headers
- Response is an array, handled by frontend logic

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5. Data Normalization Strategy

A dedicated normalization step is used to avoid fragile references such as:

- `$('Webhook').item.json...`

Instead, all downstream nodes rely on:

```
$json.keyword
```

This makes the workflow stable, scalable, and easier to debug.

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6. Error Handling

- Frontend handles network and response errors
- n8n execution errors are visible in workflow logs

- Placeholder text is shown if any platform content fails

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7. Security and Access

- Webhook protected by obscurity (can be extended with auth)
- Airtable accessed via Personal Access Token
- OpenAI credentials securely stored in n8n

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8. Customization and Extensibility

Custom Prompt Control

The system is designed to be **prompt-driven**, allowing full control over content style, depth, and format. Users or operators can:

- Modify AI prompts to change **content tone** (formal, conversational, technical, persuasive)
- Define **content type** such as:
- Educational blogs
- Thought leadership articles
- How-to guides
- Social-first short content
- Control structure rules including:
- Heading depth (H2 / H3)
- Paragraph length
- CTA placement
- Platform-specific constraints

This makes the workflow adaptable for different brands, niches, and content strategies without changing the core logic.

Company Profile Customization

Company context is fully dynamic and can be updated at any time by editing the **Company Profile table in Airtable**. This allows:

- Changing company name, positioning, and tone
- Updating services and target audience
- Switching geo focus (local, national, global)

All downstream AI nodes automatically adjust their output based on the updated company profile, ensuring brand consistency.

Integration With Additional Publishing Nodes

The workflow can be extended beyond content generation and storage by connecting additional nodes, such as:

- Social media publishing APIs (LinkedIn, X, Facebook, Instagram)
- CMS platforms (WordPress, Webflow, Headless CMS)
- Email marketing tools
- Scheduling and approval systems

This enables a **generate → approve → publish** pipeline, transforming the system into a complete content operations engine.

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9. Scalability and Future Enhancements

Planned or possible improvements:

- Async processing with job IDs
- Fetching historical content from Airtable
- User authentication
- Rate limiting
- Multi-language support
- CMS publishing (WordPress, Webflow)
- Analytics and usage tracking

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9. Final Outcome

The system successfully converts a **single keyword into a full content ecosystem** with minimal human involvement. It is suitable for:

- SEO teams
- Content agencies
- Consultants
- Founders building content engines

This project demonstrates a production-ready automation pipeline for AI-powered content repurposing.