AI-Powered Daily Canva Content Update Workflow

Project Overview

This project automates the process of updating daily news content inside a Canva design using **AI agents**, **Google Sheets integration**, and **browser automation tools**.
The system runs **every day at exactly 11:00 PM**, scrapes the **top three news headlines**, refines the text using an **LLM (Gemini 2.5 Flash)**, aggregates it, and then automatically replaces the old content in the Canva template with the new one.

This workflow ensures that the Canva design (used for social media or daily posts) stays **accurate, consistent, and up to date — without any manual intervention.**

[NOTE: This workflow is still evolving. Although updating a Canva design reliably involves high-capability reasoning and templating logic, this implementation uses Gemini 2.5 Flash (a lighter / cost-efficient variant of the Gemini 2.5 family). Therefore, some steps may repeat, deviate, or produce unintended outputs depending on context or design complexity.]

Workflow Architecture

1. Trigger

- The automation is triggered **daily at 11:00 PM** by a scheduler (for example, n8n or a similar workflow orchestrator).

2. Node 1 — *Content Writer Agent*

- **Goal:** Collect and refine the latest daily news.
- **Process:**
    1. Scrapes the **top 3 news headlines** of the day from trusted sources.
    2. Uses **Gemini 2.5 Flash** to improve readability, grammar, and conciseness.
    3. Structures the output in a clean JSON-like format:
    4. {
    5. "date": "01.11",
    6. "day": "SAT",
    7. "news1": "Headline 1...",
    8. "news2": "Headline 2...",
    9. "news3": "Headline 3..."
    10. }

3. Node 2 — *Aggregator (Code Node)*

- **Goal:** Convert the AI output into a structured dataset.
- **Process:**
    - Parses and formats the JSON output.
    - Validates fields (date, day, and three news lines).
    - Prepares the data for the next node (Google Sheets).

4. Node 3 — *Google Sheets Node*

- **Goal:** Retrieve and maintain existing design data.
- **Process:**
    - Fetches the **previous day's content** stored in the Google Sheet (mirrors what's already inside Canva).
    - Stores the **new content** generated by the aggregator.
    - Acts as the **handoff point** between the data-generation and design-update phases.

5. Node 4 — *Content Creator Agent*

- **Goal:** Update Canva design automatically.
- **Process:**
    - Receives:
        - **Old data** → from the Google Sheet.
        - **New data** → from the Aggregator node.
    - Uses **Gemini 2.5 Flash** reasoning + **Airtop AI Browser** tools to locate and replace old text inside the Canva design.

Tools Used

Tool	Purpose	Key Notes
Gemini 2.5 Flash (LLM)	Text enhancement and reasoning	Fast, cost-efficient for summarization and formatting.
Airtop AI Browser	Browser-automation agent controlling Canva	Executes click, type, and query operations in the Canva UI.
Google Sheets Node	Data persistence and synchronization	Acts as memory between workflow runs.
n8n Workflow Orchestrator	Triggering and sequencing nodes	Manages execution order and error handling.

Tool	Purpose	Key Notes
Code Node (Aggregator)	JSON structuring and transformation	Ensures consistent format for AI and design updates.

Browser Automation Tools (Inside Airtop)

1. **Start_Browser** — Initializes the browser session *(must be called only once)*.
2. **Load_URL** — Opens or refreshes the Canva design.
3. **Click** — Simulates a mouse click on a UI element (buttons, menus, inputs).
4. **Type** — Enters text into active fields.
5. **Query** — Verifies element presence or correctness of entered text.
6. **End_Session** — Safely terminates the session.

Guardrails & Best Practices

Category	Rule	Rationale
Session Control	Call Start_Browser **only once** per workflow; always call End_Session at the end.	Prevents duplicate sessions and browser conflicts.
Timing	Wait between actions (Click = 3 s, Type = 2 s, Load_URL = 5 s).	Allows Canva's UI to fully respond.
Verification	Use Query before and after typing to ensure text goes into the correct field.	Prevents "wrong field" errors.
Recovery	Retry once if element not found or click fails; if still unsuccessful, log error and continue if non-critical.	Ensures robustness.
Critical Failures	On session crash or timeout, immediately call End_Session and output an error report.	Maintains workflow stability.
Non-Blocking Errors	If a minor error occurs but the replacement succeeded, continue to the next step.	Avoids unnecessary halts.

Replacement Operations Sequence

Each Canva update follows the same **find-and-replace** pattern:

Step	Operation	Description
1	Open "File" Menu	Click → File → Find and Replace Text

Step	Operation	Description
2	Enter Find Term	Click and type **old value** (from sheet).
3	Enter Replace Term	Click and type **new value** (from aggregator).
4	Replace All	Click → “Replace All”.
5	Refresh Design	Reload URL to confirm changes.

This sequence runs **five times** per session:

1. Date replacement
2. Day replacement
3. News 1 (paragraph 1) replacement
4. News 2 (paragraph 2) replacement
5. News 3 (paragraph 3) replacement

After all five, the agent performs End_Session.

Handoffs Between Nodes

From	To	Data Transferred	Purpose
Content Writer Agent	**Aggregator**	Raw LLM output (date, day, news)	For formatting + validation
Aggregator	**Sheets Node**	Structured data	Stored for future reference
Sheets Node	**Content Creator Agent**	Old data + new data	Used for find-and-replace in Canva

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Memory & Persistence Mechanism

- **Short-term memory:** Each run retains sessionId, windowId, and current news data until the workflow ends.
- **Long-term memory:** Google Sheets keeps a log of:
    - Date and day of each update
    - News headlines used
    - Timestamp of update
    - Canva design link
- **Reusability:** The next run accesses these values to identify which text should be replaced in Canva.

Resources Used

- **Gemini 2.5 Flash API** for AI text processing.
- **Airtop Automation Environment** for controlled browser interactions.
- **Google Sheets API** for data synchronization.
- **n8n workflow engine** for orchestration.
- **Canva Design Template** (static layout reused daily).

Key Outcomes

- Fully automated content updates at 11 PM daily.
- No manual design edits required.
- Guaranteed UI stability via query verification and wait delays.
- Reproducible workflow with logging and error tracking.