

Website Generator App - Design, Structure, and Tags

OVERVIEW

Background

The existing website generator application uses a single JSON file structure where content, layout, and design elements are tightly coupled. This approach creates several challenges:

- Business users can break pages by making syntax errors in layout configuration
- Content cannot be reused across different page layouts
- Design changes require editing content files, risking data corruption
- No clear separation of concerns between what business users edit vs. what developers control
- Difficult to maintain consistency across pages with similar layouts
- No validation to prevent invalid configurations

The current system evolved organically without a formal architecture, resulting in technical debt and maintenance challenges that limit scalability.

Purpose

The WebGen Phase 1 project establishes a clean separation between form and function by refactoring the JSON architecture into distinct layers:

Configuration Layer

Site-wide settings, layout templates, navigation patterns (admin-managed)

Content Layer

Pure content blocks with no layout information (business user-managed)

Mapping Layer

Page configurations that connect content to layouts (admin-managed)

Navigation Layer

Menu structure and hub/spoke relationships (admin-managed)

This separation ensures business users can safely edit content without risk of breaking the website, while administrators maintain full control

SCOPE

In Scope

- ✅ Define 8 standardized JSON file types with clear responsibilities
- ✅ Create reusable layout templates and page patterns
- ✅ Establish hub/spoke directory structure (hub00-hub99)
- ✅ Separate content files (.content.json) from page configurations (.page.json)
- ✅ Implement site-wide configuration system (_site.json)
- ✅ Define secondary navigation patterns for hub/spoke pages
- ✅ Create validation rules and error handling
- ✅ Document migration strategy from legacy format
- ✅ Maintain backward compatibility during transition

Out of Scope

- ❌ Visual content editor UI (Phase 2)
- ❌ Multi-language content management system (Phase 2)
- ❌ Version control and content approval workflows (Phase 2)
- ❌ Automated testing suite (Phase 2)
- ❌ Performance optimization (Phase 3)
- ❌ API for external integrations (Phase 3)

For Administrators (Developers/Designers)

- 🌀 Centralized control - Change all page layouts from one file
- 🌀 Reusable templates - Define once, use everywhere
- 🌀 Easy maintenance - Fix layout bugs in one place
- 🌀 Clear ownership - Know exactly who should edit what
- 🌀 Better validation - Catch errors before deployment

For the Organization:

- 🌀 Reduced errors - Fewer broken pages in production
- 🌀 Faster time-to-market - Business users can update content independently
- 🌀 Lower training costs - Business users only learn content structure
- 🌀 Scalability - Easy to add new pages and layouts
- 🌀 Consistency - All pages follow standardized patterns

WEBSITE ARCHITECTURE

| Layers / Files |
|--|
| Layer 1: Website Definition (_site.json) |
| ↓ defines structure, paths, branding |
| Layer 2: Design Components |
| ├─ _header-layouts.json (page headers) |
| ├─ _navigation-layouts.json (secondary nav patterns) |
| ├─ _layouts.json (section layouts) |
| └─ _page-templates.json (page patterns with nav) |
| Layer 3: Content & Configuration |
| ├─ *.content.json (pure content) |
| └─ *.page.json (layout + content + nav mapping) |
| Layer 4: Navigation |
| └─ _menu.json (primary + secondary nav config) |

WHO EDITS WHAT?

| File Type | Business User | Admin |
|--------------------------|---------------|-------|
| _site.json | ✗ | ✓ |
| _layouts.json | ✗ | ✓ |
| _page-templates.json | ✗ | ✓ |
| _header-layouts.json | ✗ | ✓ |
| _navigation-layouts.json | ✗ | ✓ |
| _menu.json | ✗ | ✓ |
| *.content.json | ✓ | ● |
| *.page.json | ✗ | ✓ |























































WEBSITE FILE STRUCTURE

| Files | Directory | Migration Status |
|------------------------------------|------------------|--------------------|
| Renderer files | ./scripts/ | pending |
| CSS files | ./styles/ | pending |
| Meta/config files | ./framework/ | already refactored |
| Media files (images, etc.) | ./assets/ | no change |
| Content and page configs | ./data/en/ | in progress |
| "Site level" hub and spoke content | ./data/en/hub00/ | in progress |
| "Markets" hub and spoke content | ./data/en/hub01/ | already refactored |
| "Features" hub and spoke content | ./data/en/hub02/ | pending |

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1. WEBSITE CONFIGURATION (_site.json)

- **Required**:  = Required,  = Optional

| Tag | Definition | Values | Required | Managed By |
|--------------------------|---------------------------|-----------------------------------|---|---|
| siteId | Unique website identifier | String (alphanumeric) |  |  |
| version | Configuration version | "2.0" |  |  |
| type | Website category | "business", "family", "community" |  |  |
| tone | Communication style | "professional", "casual", "fun" |  |  |
| theme.mode | Color scheme | "light", "dark", "seasonal" |  |  |
| theme.primaryColor | Brand primary color | Hex color (#d90429) |  |  |
| theme.secondaryColor | Brand secondary color | Hex color (#a10000) |  |  |
| theme.accentColor | Accent/hover color | Hex color (#ff0000) |  |  |
| theme.fontFamily | Typography | Font stack string |  |  |
| branding.siteUrl | Website URL | URL string |  |  |
| branding.siteName | Website name | String |  |  |
| branding.tagLine | Site tagline | String |  |  |
| branding.logoPath | Logo base URL | URL string |  |  |
| directories.hubPattern | Hub naming pattern | "hub{00-99}" |  |  |
| directories.maxHubs | Maximum hubs | Integer (100) |  |  |
| directories.paths.styles | Styles root directory | Path string |  |  |
| directories.paths.meta | Framework root directory | Path string |  |  |
| directories.paths.data | Data root directory | Path string |  |  |
| directories.paths.media | Media base URL | URL string |  |  |
| languages.default | Default language | "en", "es", "fr" |  |  |
| languages.supported | Supported languages | Array of language codes |  |  |
| contact.companyName | Company legal name | String |  |  |
| contact.address | Physical address | String |  |  |
| contact.phone | Contact phone | String |  |  |
| contact.email | Contact email | Email string |  |  |
| footer.copyrightYear | Copyright year | Integer (2025) |  |  |
| footer.copyrightHolder | Copyright owner | String |  |  |

2. LAYOUT TEMPLATES (_layouts.json)

| Tag | Definition | Values | Required | Managed By |
|--|--------------------------|--|----------|------------|
| siteld | Website identifier | String (matches _site.json) | ✔ | 👤 |
| version | Configuration version | "2.0" | ✔ | 👤 |
| lastUpdated | Last modification date | ISO date string (YYYY-MM-DD) | ✔ | 👤 |
| layouts.{id} | Unique layout identifier | "alternating-image", "hero-banner", "feature-grid", etc. | ✔ | 👤 |
| layouts.{id}.name | Human-readable name | String | ✔ | 👤 |
| layouts.{id}.description | Layout purpose | String | ✔ | 👤 |
| layouts.{id}.defaultSettings | Default configuration | Object | ✔ | 👤 |
| layouts.{id}.defaultSettings.split | Width split ratio | "30-70", "40-60", "50-50", "60-40", "70-30" | 🕒 | 👤 |
| layouts.{id}.defaultSettings.imageSide | Image position | "left", "right" | 🕒 | 👤 |
| layouts.{id}.defaultSettings.columns | Column count | 1, 2, 3, 4 | 🕒 | 👤 |
| layouts.{id}.supportedSplits | Valid split values | Array of split strings | 🕒 | 👤 |
| layouts.{id}.supportedSides | Valid side values | ["left", "right"] | 🕒 | 👤 |
| layouts.{id}.contentSlots | Required content fields | Object defining slots | ✔ | 👤 |
| contentSlots.{slot}.required | Is field required | true, false | ✔ | 👤 |
| contentSlots.{slot}.type | Field data type | "text", "richtext", "array", "media", "link" | ✔ | 👤 |

3. PAGE TEMPLATES (_page-templates.json)

| Tag | Definition | Values | Required | Managed By |
|---|------------------------|--|----------|------------|
| siteld | Website identifier | String (matches _site.json) | ✔ | 👤 |
| version | Configuration version | "2.0" | ✔ | 👤 |
| lastUpdated | Last modification date | ISO date string (YYYY-MM-DD) | ✔ | 👤 |
| pageTemplates.{id} | Template identifier | "alternating-sections-left-start", "hub-with-tab-menu", etc. | ✔ | 👤 |
| pageTemplates.{id}.name | Template name | String | ✔ | 👤 |
| pageTemplates.{id}.description | Template purpose | String | ✔ | 👤 |
| pageTemplates.{id}.headerLayout | Header style | Reference to _header-layouts.json ID | ✔ | 👤 |
| pageTemplates.{id}.secondaryNav | Navigation pattern | Reference to _navigation-layouts.json ID | ✔ | 👤 |
| pageTemplates.{id}.contentLayout.pattern | Content pattern | "repeating-alternating", "dynamic-sections", "static" | ✔ | 👤 |
| pageTemplates.{id}.contentLayout.firstSide | Starting image side | "left", "right" | 🕒 | 👤 |
| pageTemplates.{id}.contentLayout.defaultSplit | Default width split | "30-70", "50-50", "70-30" | 🕒 | 👤 |

4. HEADER LAYOUTS (_header-layout

| Tag | Definition | Values | Required | Managed By |
|----------------------------------|-------------------------|--|----------|------------|
| siteld | Website identifier | String (matches _site.json) | ✔ | 👤 |
| version | Configuration version | "2.0" | ✔ | 👤 |
| lastUpdated | Last modification date | ISO date string (YYYY-MM-DD) | ✔ | 👤 |
| headerLayouts.{id} | Header style identifier | "standard", "minimal", "breadcrumb-header", etc. | ✔ | 👤 |
| headerLayouts.{id}.name | Header name | String | ✔ | 👤 |
| headerLayouts.{id}.description | Header purpose | String | ✔ | 👤 |
| headerLayouts.{id}.alignment | Text alignment | "center", "left", "right", "split" | ✔ | 👤 |
| headerLayouts.{id}.components | Displayed elements | Array: ["title", "subtitle", "breadcrumb", "divider", "actions"] | ✔ | 👤 |
| headerLayouts.{id}.titleSize | Title font size | CSS size string ("42px", "2em") | ✔ | 👤 |
| headerLayouts.{id}.subtitleStyle | Subtitle styling | "uppercase-red", "normal", "italic" | 🕒 | 👤 |
| headerLayouts.{id}.dividerStyle | Divider line style | "full-width", "centered", "none" | 🕒 | 👤 |
| headerLayouts.{id}.integrated | Integrated with hero | true, false | 🕒 | 👤 |

5. NAVIGATION LAYOUTS (_navigation-layouts.json)

| Tag | Definition | Values | Required | Managed By |
|---|------------------------|---|----------|------------|
| siteld | Website identifier | String (matches _site.json) | ✔ | 👤 |
| version | Configuration version | "2.0" | ✔ | 👤 |
| lastUpdated | Last modification date | ISO date string (YYYY-MM-DD) | ✔ | 👤 |
| navigationLayouts.{id} | Nav pattern identifier | "tab-bar-sibling", "sidebar-left", "none", etc. | ✔ | 👤 |
| navigationLayouts.{id}.name | Navigation name | String | ✔ | 👤 |
| navigationLayouts.{id}.type | Navigation type | "secondary", "none" | ✔ | 👤 |
| navigationLayouts.{id}.style | Display style | "horizontal-tabs", "vertical-sidebar", "breadcrumb" | ✔ | 👤 |
| navigationLayouts.{id}.position | Screen position | "below-header", "left", "right", "above-header" | ✔ | 👤 |
| navigationLayouts.{id}.sticky | Sticky scroll behavior | true, false | 🔵 | 👤 |
| navigationLayouts.{id}.behavior.showHubLink | Display hub link | true, false | 🔵 | 👤 |
| navigationLayouts.{id}.behavior.showSiblings | Display sibling links | true, false | 🔵 | 👤 |
| navigationLayouts.{id}.behavior.highlightActive | Highlight current page | true, false | 🔵 | 👤 |
| navigationLayouts.{id}.behavior.centerAlign | Center navigation | true, false | 🔵 | 👤 |
| navigationLayouts.{id}.visibility.hubPage | Show on hub pages | true, false | ✔ | 👤 |
| navigationLayouts.{id}.visibility.spokePage | Show on spoke pages | true, false | ✔ | 👤 |
| navigationLayouts.{id}.width | Sidebar width | CSS size string ("250px") | 🔵 | 👤 |
| navigationLayouts.{id}.cssClasses | CSS class names | Array of strings | 🔵 | 👤 |

6. MENU CONFIGURATION (_menu.json)

| Tag | Definition | Values | Required | Managed By |
|--|------------------------|---|----------|------------|
| siteld | Website identifier | String (matches _site.json) | ✔ | 👤 |
| version | Configuration version | "2.0" | ✔ | 👤 |
| lastUpdated | Last modification date | ISO date string (YYYY-MM-DD) | ✔ | 👤 |
| menuItems.{id} | Menu item identifier | "markets", "features", "services", etc. | ✔ | 👤 |
| menuItems.{id}.label | Display name | String | ✔ | 👤 |
| menuItems.{id}.type | Page type | "hub", "spoke" | ✔ | 👤 |
| menuItems.{id}.hub | Parent hub ID | "hub00", "hub01", "hub02", etc. | ✔ | 👤 |
| menuItems.{id}.dataFile | Content file path | "hub01/markets.json" | ✔ | 👤 |
| menuItems.{id}.order | Display order in menu | Integer | 🔵 | 👤 |
| menuItems.{id}.secondaryNav.layout | Nav layout ID | Reference to _navigation-layouts.json | ✔ | 👤 |
| menuItems.{id}.secondaryNav.showOnHub | Show on hub home | true, false | 🔵 | 👤 |
| menuItems.{id}.secondaryNav.showOnSpokes | Show on spoke pages | true, false | 🔵 | 👤 |
| menuItems.{id}.defaultSection | Default hub section | String (section ID) | 🔵 | 👤 |
| menuItems.{id}.children | Child pages (spokes) | Array of page objects | 🔵 | 👤 |
| children[].id | Child page ID | String | ✔ | 👤 |
| children[].label | Child display name | String | ✔ | 👤 |
| children[].dataFile | Child content file | "hub01/mlm.json" | ✔ | 👤 |

7. CONTENT FILE (*.content.json)

| Tag | Definition | Values | Required | Managed By |
|--|---------------------------|---|----------|------------|
| siteld | Website identifier | String (matches _site.json) | | |
| contentId | Unique content identifier | String matching filename | | |
| language | Content language | "en", "es", "fr" | | |
| hub | Hub directory | "hub00", "hub01", "hub02" | | |
| lastUpdated | Last edit date | ISO date string (YYYY-MM-DD) | | |
| author | Content author | String | | |
| blocks | Content blocks container | Object | | |
| blocks.{blockId} | Individual content block | Unique block identifier | | |
| blocks.{blockId}.id | Block identifier | String (matches key) | | |
| blocks.{blockId}.source | Source of content block | "file", "database" (Defaults to "file" if omitted.) | | |
| blocks.{blockId}.title | Section title | String | | |
| blocks.{blockId}.paragraph | Main text content | String (plain text or markdown) | | |
| blocks.{blockId}.listItems | Bullet point list | Array of strings | | |
| blocks.{blockId}.media | Media object | Object | | |
| blocks.{blockId}.media.type | Media type | "image", "carousel", "video" | | |
| blocks.{blockId}.media.src | Image filename | "165507.jpg" | | |
| blocks.{blockId}.media.alt | Alt text | String | | |
| blocks.{blockId}.callToAction | Link object | Object | | |
| blocks.{blockId}.callToAction.text | Link text | "READ MORE", "Learn More" | | |
| blocks.{blockId}.callToAction.targetId | Link destination | Page ID ("mlm", "features") | | |

8. PAGE CONFIGURATION (*.page.json)

| Tag | Definition | Values | Required | Managed By |
|--|-----------------------------------|---------------------------------------|----------|------------|
| siteld | Website identifier | String (matches _site.json) | ✓ | 👤 |
| pageld | Unique page identifier | String matching filename | ✓ | 👤 |
| pageType | Page classification | "hub", "spoke" | ✓ | 👤 |
| language | Page language | "en", "es", "fr" | ✓ | 👤 |
| hub | Hub directory | "hub00", "hub01", "hub02" | ✓ | 👤 |
| pageTemplate | Page template ID | Reference to _page-templates.json | ✓ | 👤 |
| headerLayout | Header layout ID | Reference to _header-layouts.json | ✓ | 👤 |
| secondaryNav | Navigation layout ID | Reference to _navigation-layouts.json | ✓ | 👤 |
| contentSource | Content file reference | Content file ID (without extension) | ✓ | 👤 |
| metadata | Page metadata | Object | ✓ | 👤 |
| metadata.title | Page title | String | ✓ | 👤 |
| metadata.subtitle | Page subtitle | String | ⬤ | 👤 |
| metadata.description | SEO description | String | ⬤ | 👤 |
| metadata.keywords | SEO keywords | Array of strings | ⬤ | 👤 |
| contentBlocks | Ordered content list (simple terr | Array of block IDs from content file | ⬤* | 👤 |
| sections | Section definitions (manual cont | Array of objects | ⬤* | 👤 |
| sections[].sectionId | Section identifier | String | ✓ | 👤 |
| sections[].layoutTemplate | Section layout | Reference to _layouts.json | ✓ | 👤 |
| sections[].layoutSettings | Layout overrides | Object | ⬤ | 👤 |
| sections[].layoutSettings.split | Width split override | "30-70", "50-50", "70-30" | ⬤ | 👤 |
| sections[].layoutSettings.imageSide | Image position override | "left", "right" | ⬤ | 👤 |
| sections[].contentMapping | Content-to-layout map | Object | ✓ | 👤 |
| sections[].contentMapping.contentBlock | Block ID reference | String from content file | ✓ | 👤 |
| sections[].contentMapping.slots | Slot assignments | Object mapping slots to content | ✓ | 👤 |

****Note:**** Use contentBlocks OR sections, not both. Required field depends on pageTemplate.contentLayout.pattern:

- Use contentBlocks when pattern = "repeating-alternating" (auto-generates sections)
- Use sections when pattern = "dynamic-sections" (manual section control)

9. COMMON PATTERNS BY FILE TYPE

| Patten Name | Content File | Page File |
|------------------------------------|-------------------------|---|
| Simple Spoke Page (e.g., Services) | Pure content blocks | pageTemplate: "alternating-sections-right-start" |
| | | headerLayout: "standard" |
| | | secondaryNav: "none" |
| | | contentBlocks: ["block1", "block2", "block3"] |
| Hub Page (e.g., Markets) | Overview content blocks | pageTemplate: "alternating-sections-left-start" |
| | | headerLayout: "standard" |
| | | secondaryNav: "none" |
| | | contentBlocks: ["mlm-overview", "partyplan-overview", "b2b-overview"] |
| Spoke with Sibling Nav (e.g., MLM) | Detail content blocks | pageTemplate: "alternating-sections-right-start" |
| | | headerLayout: "standard" |
| | | secondaryNav: "tab-bar-sibling" |
| | | contentBlocks: ["mlm-detail-1", "mlm-detail-2"] |
| Hub with Tab Menu (e.g., Features) | Multiple section groups | pageTemplate: "hub-with-tab-menu" |
| | | headerLayout: "standard" |
| | | secondaryNav: "tab-bar-hub-sections" |
| | | sections: { "home": [...], "frontend": [...], "backoffice": [...] } |

10. VALIDATION RULES

| Check | Rule | Error Message |
|--------------------|---|--|
| Site consistency | siteId matches across all files | "Site ID mismatch - file belongs to different project" |
| File naming | {pageld}.content.json matches contentId | "Content ID must match filename" |
| File naming | {pageld}.page.json matches pageld | "Page ID must match filename" |
| Hub reference | hub value exists in _site.json definitions | "Invalid hub reference" |
| Template reference | pageTemplate exists in _page-templates.json | "Template not found" |
| Layout reference | layoutTemplate exists in _layouts.json | "Layout not found" |
| Content reference | All contentBlocks exist in content file | "Content block not found" |
| Required slots | All required slots defined in layout are mapped | "Missing required content slot" |
| Image side | imageSide is "left" or "right" | "Invalid imageSide value" |
| Split ratio | split matches pattern \d+-\d+ and sums to 100 | "Invalid split ratio" |

11. DEPRECATED ASSETS (Phase 1 Migration)

Tags/Patterns No Longer Used

| Old Tag/Pattern | Used In | Replaced By | Migration Notes |
|--------------------------------|---------------------------|--------------------------------------|---|
| commonData | Old JSON structure | Content blocks in *.content.json | Extracted to separate content files; shared content now managed through content block |
| imageSide: "image-left" | Old section definitions | imageSide: "left" | Simplified to "left"/"right" only for consistency |
| imageSide: "image-right" | Old section definitions | imageSide: "right" | Simplified to "left"/"right" only for consistency |
| Embedded media base paths | Old JSON files | _site.json → directories.paths.media | Centralized in site configuration for easier updates |
| pageType: "spoke" without hub | Old menu structure | hub: "hub00" required | All pages must explicitly specify hub directory |
| Inline carousel configurations | Old sections | Standardized media object | All media now uses consistent structure with type, src, alt |
| Mixed content/layout JSON | Old single-file structure | Separated .content.json + .page.json | Clean separation of concerns achieved |
| tagline (lowercase) | _site.json | tagLine (camelCase) | Standardized casing for consistency |

Files No Longer Used

| Old File | Purpose | Replaced By | Status |
|-----------------------------|-----------------------------------|--|--------------------------------|
| markets.json (single file) | Combined content + layout | markets.content.json + markets.page.json | Keep for Phase 1 compatibility |
| services.json (single file) | Combined content + layout | services.content.json + services.page.json | Keep for Phase 1 compatibility |
| features2.json | Test/alternate features page | features.content.json + features.page.json | Can be deleted after migration |
| Old _menu.json format | Navigation without hub references | New _menu.json with hub structure | Deprecated - do not use |

Structural Changes

| Old Pattern | New Pattern | Reason |
|-----------------------------|---------------------------------------|-----------------------------------|
| Single JSON per page | Two files: .content.json + .page.json | Separation of content from layout |
| Layout embedded in content | Layout defined in page templates | Reusability and consistency |
| No site-level configuration | _site.json with global settings | Centralized configuration |
| Ad-hoc section layouts | Defined in _layouts.json | Standardized components |
| Inline navigation config | _navigation-layouts.json patterns | Reusable navigation templates |