

ASTERION VR

Design Handoff Specification

Brand • Tokens • Components • Layouts • Motion • A11y

Train like the threat is now.

Document de référence — Mai 2026
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Livrable 2/2 — voir aussi : Stratégie & Contenu

Table des matières

Ce document est destiné au designer et au développeur frontend qui réaliseront le nouveau site asterionvr.com. Il définit les choix esthétiques, les jetons de design (design tokens), les composants UI, les templates de page et les exigences techniques (responsive, accessibilité, motion).

Introduction

Cette spécification accompagne le livrable principal « Stratégie & Contenu ». Elle traduit les recommandations stratégiques en choix concrets et exécutables : palette, typographie, composants, layouts, animations, breakpoints, accessibilité.

Audience : designer (Figma) et développeur frontend (React/Next.js, Vue, ou équivalent). Le document est rédigé en français pour les sections de cadrage, en anglais pour les libellés produits et les nommages de tokens (cohérence internationale du codebase).

Comment lire ce document

- Section 1 — Brand identity : ce que la marque dit, comment elle parle, ce qu'elle évite.
- Section 2 — Design tokens : les valeurs atomiques (couleurs, typo, spacing, radii, shadows) à coder une fois, à réutiliser partout.
- Section 3 — Components : la bibliothèque UI (boutons, formulaires, cartes, navigation, etc.).
- Section 4 — Layouts : les wireframes textuels de chaque template de page.
- Section 5 — Motion & interactions : animations, microinteractions, scroll behavior.
- Section 6 — Responsive : breakpoints et règles de comportement.
- Section 7 — Accessibility : WCAG 2.1 AA, focus, ARIA, motion-safe.
- Section 8 — Implementation notes : stack recommandée, performance, assets.

1. Brand identity

1.1. Brand essence

Asterion VR : la plateforme XR modulaire et souveraine pour les forces de sécurité. Elle réplique l'imprévisible, mesure tout, et tient dans une mallette.

L'identité visuelle doit transmettre quatre attributs simultanément :

- Sérieux institutionnel — pour rassurer les acheteurs publics.
- Précision technique — pour parler aux instructeurs et opérateurs.
- Sobriété européenne — pour signaler la souveraineté française.
- Énergie tactique — pour transmettre l'urgence et l'engagement.

1.2. Voice & tone

Voice (constant)

- Direct. On ne tourne pas autour du pot.
- Mesuré. On ne sur-vend pas. On chiffre, on cite, on prouve.
- Respectueux de l'expertise du lecteur. On ne lui explique pas son métier.
- Pédagogique sans paternalisme. La VR est nouvelle pour beaucoup ; on la rend lisible sans la diluer.

Tone (variable selon le contexte)

- Home / pages produit : confiant, légèrement cinématique. Ex. « Your last mistake should be in VR. »
- Pages industries : pragmatique, problème-solution. Ex. « Vehicle stops, identity checks, urban CQB. Built for the realities of contemporary policing. »
- Pages technologie : précis, technique. Ex. « Per-eye resolution: 2448 × 2448. Refresh rate: 90 Hz. »
- Blog : narratif, parfois personnel (Founder's Notes), avec citations sourcées.
- Conversion (CTA) : actionnable et explicite. « Schedule a 30-minute demo. We respond within 48 hours. »

Formules signature à utiliser

- Your Last Mistake Should Be in VR. (signature principale)
- Train Like the Threat Is Now. (signature tactique)
- Fail Here. Succeed There. (signature pédagogique)
- Built with operators, for operators. (assertion de marque)
- Behavior, not scripts. (différenciateur AI)
- The weapon you train with is the weapon you carry. (différenciateur weapon)

1.3. Naming & hiérarchie

Architecture de naming à respecter strictement dans le site :

ASTERION VR™ (corporate, parent brand)
 PROSERVE™ (product line, all caps in body copy)
 MY PROSERVE™ (solo tier)
 PROSERVE FLEX™ (team tier)

PROSERVE ACADEMY™ (unit tier)

PROSERVE+™ (customization tier)

UWeD™ (Universal Weapon Digitizer — capitalize as written)

Le symbole ™ s'affiche uniquement à la première occurrence dans une page.

1.4. Interdits visuels

- Pas de glitch art / effet pixel, pas d'imagerie cyberpunk.
- Pas d'iconographie « jeu vidéo » (manettes, crosshairs ludiques).
- Pas de gore, pas de blessures détaillées.
- Pas de patriotisme exclusif (drapeaux trop visibles).
- Pas de gradients orange/teal cinéma cliché.
- Pas d'emoji.
- Pas de logo « luxury gold » brillant — l'or doit rester mat et discret.

2. Design tokens

Les tokens sont les valeurs atomiques du design system. Ils doivent être codés une seule fois et référencés via des variables CSS / SCSS / Tailwind config. Ne jamais utiliser de valeurs hardcodées dans les composants.

2.1. Color palette

Brand colors

Token	Hex	Usage
color-brand-navy	#0B1F3A	Primary brand color. Hero backgrounds. Main dark surfaces. Body text on light backgrounds (alternative to slate).
color-brand-navy-deep	#081427	Deeper navy for layered dark surfaces, footer, modals on dark.
color-brand-gold	#C9A45A	Accent. Primary CTA fill. Brand signature. Section dividers (gold rule). Use sparingly — max 5% of any viewport.
color-brand-gold-soft	#E0C892	Hover state for gold elements. Lighter gold for icon outlines.
color-alert-red	#C8102E	Critical alerts only. Live training badge. Error states. Never used decoratively.

Neutral colors

Token	Hex	Usage
color-text-primary	#0B1F3A	Primary text on light backgrounds (= navy). Headlines.
color-text-secondary	#3E4C5E	Body copy on light backgrounds (slate).
color-text-muted	#6B7785	Captions, meta text, footer secondary text.
color-text-on-dark	#FFFFFF	Text on dark backgrounds (navy).
color-text-on-dark-muted	#B6BFCC	Secondary text on dark backgrounds.
color-bg-default	#FFFFFF	Default page background.
color-bg-subtle	#F5F7FA	Section background for visual rhythm.

Token	Hex	Usage
color-bg-elevated	#FFFFFF	Cards, elevated surfaces (with shadow).
color-bg-dark	#0B1F3A	Dark hero, dark sections, dark footer.
color-bg-dark-elevated	#13294B	Cards on dark backgrounds.
color-border-default	#CCD3DC	Default border on light surfaces.
color-border-subtle	#E5E9EE	Subtle dividers.
color-border-on-dark	#1F3252	Borders on dark surfaces.

Semantic colors

Token	Hex	Usage
color-success	#1F8B4C	Success states (form submitted, etc.).
color-warning	#C29327	Warning states. Distinct from gold accent (more amber).
color-error	#C8102E	= alert-red. Error states, validation.
color-info	#1E5BA8	Informational, neutral notices.

Color usage rule (60-30-10)

60% — neutrals (white, off-white, dark navy)

30% — primary brand (navy)

10% — accent (gold), alerts (red), semantic colors

Aucun écran ne doit être dominé par l'or. L'or signale, il n'habille pas.

2.2. Typography

Famille recommandée : un duo sans-serif moderne et discipliné. Trois options par ordre de préférence.

Font family — recommandation principale

- Display + Headings: Inter Display (free, open-source). Variable font, supports tight tracking.
- Body: Inter (free, open-source). Industry standard for product UI.

Fallback stack:

```
font-family: "Inter Display", "Inter", -apple-system, BlinkMacSystemFont, "Segoe UI", Roboto, "Helvetica Neue", Arial, sans-serif;
```

Font family — alternative premium

- Display + Headings: Söhne Breit (paid license, Klim Type Foundry).
- Body: Söhne (paid license).

Plus d'âme typographique, à considérer si le budget design le permet.

Font family — alternative française

- Display + Headings: GT America (paid license).
- Body: Source Sans 3 (free).

Type scale (rem-based, base 16px)

Token	Size	Line	Weight	Usage
text-display-xl	4.5rem (72px)	1.05	700	Hero headlines on home (« Your Last Mistake Should Be in VR. »)
text-display-lg	3.5rem (56px)	1.1	700	Page hero on solution/industry pages
text-display-md	2.75rem (44px)	1.15	700	Major section headlines (H2 in body)
text-h1	2.25rem (36px)	1.2	700	Article H1, sub-page hero
text-h2	1.75rem (28px)	1.25	700	Section title within page
text-h3	1.375rem (22px)	1.3	600	Sub-section, card title
text-h4	1.125rem (18px)	1.35	600	Small heading, emphasized lead
text-body-lg	1.25rem (20px)	1.55	400	Lead paragraphs, hero subtitle
text-body-md	1rem (16px)	1.6	400	Default body copy
text-body-sm	0.875rem (14px)	1.5	400	Captions, meta text, table cells

Token	Size	Line	Weight	Usage
text-overline	0.75rem (12px)	1.4	600	Eyebrow / tag labels (uppercase, letter-spacing 0.08em)

Typographic rules

- Headings: tight tracking (-0.01em to -0.02em). Body: default tracking (0).
- Hyphenation : disabled by default. Enable only for narrow content (sidebars, mobile).
- Max line width body: 72ch (~720px) for prose readability.
- Pas d'italique sur les paragraphes longs (réservé aux citations et accents ponctuels).
- All-caps réservé à text-overline (eyebrows et tags).
- Ne jamais souligner du texte non-cliquable. Liens : underline thin (0.05em) + offset 0.15em.

2.3. Spacing scale (8-point grid)

Base unit : 8 px (= 0.5 rem). Tous les espacements sont des multiples de 4 ou 8 pour rythme cohérent et alignement parfait au pixel.

Token	Value	Usage
space-0	0	Reset margin/padding
space-1	4 px	Inline icon spacing, micro adjustments
space-2	8 px	Inline gap, tag padding-x
space-3	12 px	Form field padding, button padding-x small
space-4	16 px	Card padding-y, default vertical rhythm
space-5	20 px	Default button padding-x
space-6	24 px	Card padding default, between paragraphs (small)
space-8	32 px	Between sub-sections, paragraph spacing (large)
space-10	40 px	Between section blocks (small)
space-12	48 px	Card padding (large)
space-16	64 px	Between section blocks (default)
space-20	80 px	Between section blocks (large) — desktop
space-24	96 px	Hero vertical padding — desktop
space-32	128 px	Hero vertical padding XL — desktop

Container & grid

- Max content width: 1280 px (token: container-max).
- Container horizontal padding: 24 px on mobile, 32 px on tablet, 64 px on desktop.
- Grid: 12 columns on desktop, 8 on tablet, 4 on mobile. Gutter: 24 px desktop, 16 px tablet, 16 px mobile.

2.4. Border radius

- radius-none: 0 — tactical surfaces, primary CTAs (no rounded corners on tactical buttons).
- radius-sm: 2 px — subtle rounding on form fields, tags.
- radius-md: 4 px — cards, modals.
- radius-lg: 8 px — large cards, image containers.
- radius-pill: 9999 px — pills/badges.
- radius-full: 50% — avatars, circular icon containers.

Note tactique sur les radius

L'esprit tactical dicte des coins droits ou très peu arrondis. Privilégier radius-sm ou radius-md pour la plupart des composants. Le radius-lg est réservé aux médias (images, vidéos).

2.5. Shadows

- shadow-none: none.
- shadow-xs: 0 1px 2px rgba(11, 31, 58, 0.05). Subtle elevation.
- shadow-sm: 0 2px 4px rgba(11, 31, 58, 0.08), 0 1px 2px rgba(11, 31, 58, 0.06). Default card.
- shadow-md: 0 4px 12px rgba(11, 31, 58, 0.10), 0 2px 4px rgba(11, 31, 58, 0.06). Hover card.
- shadow-lg: 0 12px 24px rgba(11, 31, 58, 0.14), 0 4px 8px rgba(11, 31, 58, 0.08). Modal, elevated CTA.
- shadow-glow-gold: 0 0 24px rgba(201, 164, 90, 0.35). Hover state on primary CTA only.

2.6. Border widths

- border-thin: 1 px.
- border-default: 2 px.
- border-thick: 3 px (rare, for heavy emphasis).
- Default style: solid. Dashed: only for placeholder states.

2.7. Z-index scale

- z-base: 1 (default content).
- z-dropdown: 1000 (mega menus, autocomplete).
- z-sticky: 1100 (sticky header).
- z-fixed: 1200 (mobile menu drawer).
- z-modal-backdrop: 1300.
- z-modal: 1310.
- z-popover: 1400 (tooltips, popovers).
- z-toast: 1500 (notifications).

3. Components

Bibliothèque UI de base. Chaque composant est décrit avec ses variantes, ses états, ses props et ses notes d'accessibilité. Les valeurs visuelles font référence aux tokens définis en section 2.

3.1. Buttons

Variants

- **button-primary** — fond gold, texte navy. Action principale. Max 1 par section.
- **button-secondary** — fond transparent, border navy, texte navy. Action complémentaire.
- **button-ghost** — fond transparent, texte navy. Action discrète, navigation interne.
- **button-on-dark** — variante des trois ci-dessus pour fond sombre (texte gold/white selon variant).
- **button-destructive** — fond alert-red, texte white. Confirmations destructives uniquement.

Sizes

- **size-sm** — height 32px, padding-x 12px, text-body-sm.
- **size-md (default)** — height 44px, padding-x 20px, text-body-md, weight 600.
- **size-lg** — height 52px, padding-x 28px, text-body-lg, weight 600.
- **size-xl (hero only)** — height 60px, padding-x 36px, text-h4, weight 700.

States

- **default** — gold background, navy text.
- **hover** — gold background, +5% darken, slight lift (translateY(-1px)) + shadow-glow-gold.
- **focus** — visible 2px outline (color-info), 2px offset.
- **active** — gold background, +10% darken, no lift.
- **disabled** — opacity 0.4, cursor not-allowed.
- **loading** — text replaced with spinner (16-20px), button disabled, aria-busy="true".

Transition

transition: background-color 150ms ease, transform 150ms ease, box-shadow 200ms ease;

Border radius

radius-sm (2px) by default. Tactical aesthetics prefer crisp corners. Never use radius-pill for primary CTAs.

Icon usage

- Icons inside buttons: 16-20px depending on size.
- Icon position: leading (left) for action buttons (Download, Watch), trailing (right) for navigation buttons (Read more, See all). Use chevron-right for navigation.
- Gap between icon and label: space-2 (8px).

Pseudo-code example

```
<button class="btn btn-primary btn-md">
  <span>Request a Demo</span>
  <ChevronRight aria-hidden="true" />
</button>
```


3.2. Links (text)

- default — color navy, no underline.
- hover — color gold, underline thin (1px) with offset 4px.
- focus — visible outline.
- visited — same as default (no purple).
- on-dark — color text-on-dark; hover gold.

3.3. Forms

Input field

- Height 44px, padding-x 12px, padding-y 10px.
- Border 1px solid color-border-default, radius-sm.
- Background white, text color-text-primary, placeholder color-text-muted.
- Focus state: border 2px solid color-info, no box-shadow.
- Error state: border 2px solid color-error, error message below in color-error, text-body-sm.
- Success state: border 2px solid color-success, optional checkmark icon trailing.
- Disabled: bg color-bg-subtle, text muted.

Label

- Position: above input, gap space-2.
- Style: text-body-md, weight 600, color text-primary.
- Required indicator: asterisk in color-error after label.
- Helper text: below input, text-body-sm, color text-muted.

Select / Dropdown

- Same dimensions and states as input field.
- Trailing chevron-down icon (16px).
- Native <select> on mobile, custom listbox on desktop with full keyboard support (Arrow Up/Down, Enter, Escape).

Checkbox / Radio

- Size 20×20 px.
- Border 2px color-border-default by default.
- Checked state: filled with brand-navy, white check icon (or radio dot).
- Focus: 2px outline color-info, 2px offset.
- Label gap: space-3 (12px).
- Always associate label with input via for/id or wrap in <label>.

Textarea

- Min height 96 px (4 rows). Resize: vertical only.
- Same border, padding, and states as input field.

Form layout

- Single column by default. Multi-column only for short fields (City + Postal code).

- Vertical spacing between fields: space-6 (24 px).
- Submit button: full-width on mobile, auto-width on desktop, button-primary, size-lg.
- Form-level errors: above the form in alert component.
- After submit: replace form with success state component.

3.4. Cards

Card variants

- card-product — for solution / industry cards. Image top, padding 24px, title, description, CTA.
- card-feature — for technology features. Icon top (or thumbnail), title, description.
- card-case-study — for case study listing. Image top with overlay logo/badge, organization label, title, excerpt, metric stat.
- card-blog — for blog listings. Image top, category eyebrow, title, excerpt, author + date.
- card-quote — for testimonials. Quote mark, quote text, attribution, optional photo.

Card structure (common)

- Background color-bg-elevated.
- Radius: radius-md (4px).
- Shadow: shadow-sm by default, shadow-md on hover.
- Padding: 24-32 px.
- Hover: 2px transform translateY(-2px), 200ms ease.

Stat callout component

- Used on home, industry pages. Big number top (text-display-lg, weight 700, color brand-navy or gold), label below (text-body-sm uppercase, letter-spacing 0.08em, muted).
- Optional source citation underneath in smallest text.
- Example: 40% / Tactical errors under stress / Source: Journal of Experimental Psychology, 2020

3.5. Navigation

Header (sticky)

- Height: 72 px desktop, 60 px mobile.
- Background: white default. After scroll > 80px: white with shadow-sm.
- Logo (left): SVG, height 32 px.
- Main nav (center on desktop): 5 items — Solutions / Industries / Technology / Why Asterion / Insights.
- Right cluster: Language switcher (EN / FR), Search icon, Primary CTA button (Request a Demo, button-primary, size-md).
- Mobile: logo left, hamburger menu right (24×24 px), open drawer with full-screen menu.

Mega menu (Solutions, Industries, Technology, Why Asterion)

- Trigger: hover on desktop (with delay 150ms), click on touch.
- Width: 100% viewport, max 1280 px.
- Layout: 3-4 columns of links, with featured card on the right showing latest case study or insight.
- Background: white, padding 32 px, shadow-md.
- Close on: outside click, Escape key, focus leaving menu.
- Keyboard: Tab through items, Arrow keys navigate within columns, Escape to close.

Mobile drawer

- Full-screen overlay, 100vh.
- Background: brand-navy, text white.
- Accordion sections for each main nav item.
- Close button (X) top right.
- CTA button at bottom (sticky).
- Language switcher and social links at bottom.

Breadcrumb

- Position: above page hero, only on inner pages (not home).
- Style: text-body-sm, color-text-muted, separator chevron-right (12px).
- Current page: color-text-primary, no underline, no link.

Footer

- Background: brand-navy-deep, text color-text-on-dark.
- 5 columns on desktop: Solutions / Industries / Why Asterion / Resources / Newsletter.
- Stack on mobile (accordion sections).
- Bottom strip: copyright · privacy · terms · cookies · LinkedIn / YouTube · language switcher.
- Padding: 80 px top/bottom desktop, 48 px mobile.

3.6. Alerts & messages

Inline alert

- Variants: info (color-info), success (color-success), warning (color-warning), error (color-error).
- Background: tinted version of the variant color (8% opacity).
- Border-left: 3 px solid variant color.
- Icon leading (16 px), title (text-h4), description (text-body-sm).
- Optional close button (only if dismissible).

Toast notification

- Position: top-right desktop, top-center mobile.
- Width: 360 px desktop, full-width minus 24px on mobile.
- Auto-dismiss: 5 seconds (configurable).
- Animation: slide in from right (or top on mobile), fade out.

3.7. Modals

- Backdrop: rgba(11, 31, 58, 0.6) with backdrop-filter blur(2px).
- Modal: max 600 px width, padding 32 px, radius-md, shadow-lg.
- Close: X button top-right, click outside, Escape key.
- Focus trapped inside modal.
- Initial focus: first focusable element or close button.
- Restore focus to trigger on close.

3.8. Tooltips & popovers

- Tooltip: 8 px padding, max 240 px width, brand-navy bg, white text, text-body-sm.
- Show on hover (desktop) or focus, delay 400 ms.
- Always have a non-tooltip equivalent for touch users (no hover-only content).

3.9. Tabs & accordions

Tabs (used on technology pages)

- Horizontal layout. Active tab: navy text, gold underline 2 px below.
- Inactive tab: muted text, no underline.
- Keyboard: Arrow keys navigate, Enter activates, Tab moves out.

Accordion (used on FAQ, mobile menu)

- Header: full-width clickable, padding 16-24 px, chevron-down icon (rotates 180° when expanded).
- Border-bottom 1 px between items.
- Animation: max-height transition 250 ms ease.
- ARIA: aria-expanded, aria-controls, role="region" on content.

3.10. Tables (specifications)

- Used on solution comparison pages.
- Header row: brand-navy bg, white text, weight 600, text-body-sm.
- Body rows: alternating white and color-bg-subtle for zebra striping (optional).
- Cell padding: 12 px vertical, 16 px horizontal.
- Border bottom 1 px color-border-subtle on each row.
- Mobile: collapse to stacked cards (each row becomes a card).

3.11. Badges & tags

- Pill shape (radius-pill), padding 4-12 px, text-overline.
- Variants: neutral (subtle bg), brand (navy bg, white text), accent (gold bg, navy text), alert (red bg, white text — for « Live training » or critical labels).

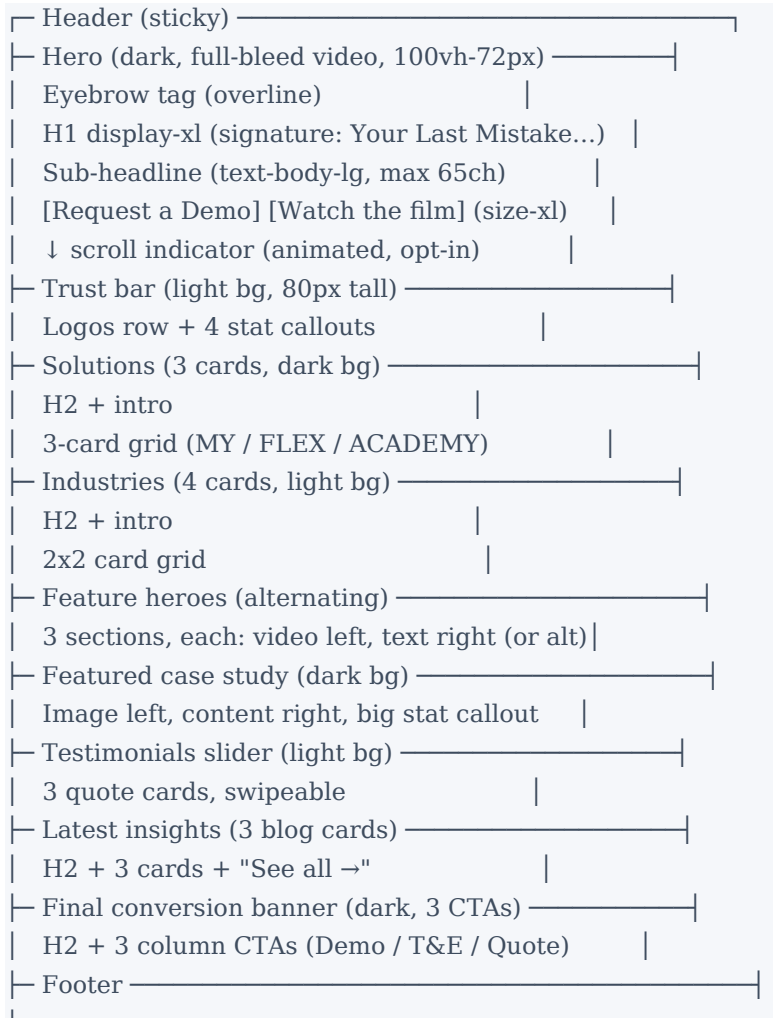
3.12. Logo & brand assets

- Primary logo: ASTERION VR with hexagonal mark. Provide SVG and PNG (transparent and white versions).
- Minimum height: 24 px digital, 12 mm print.
- Clear space: equal to the height of the « A » in ASTERION around the logo.
- Never stretch, recolor, or rotate.
- On dark backgrounds: white version. On light: navy version.

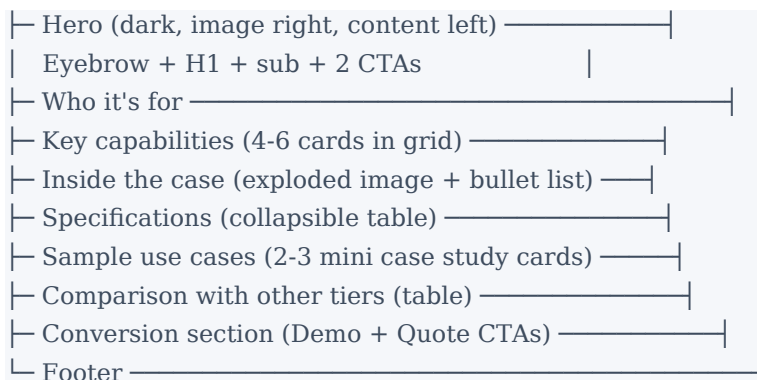
4. Page templates (layouts)

Sept templates couvrent l'intégralité du site. Pour chaque template, le wireframe suivant décrit la structure et les composants utilisés. Les contenus textuels sont dans le livrable « Stratégie & Contenu ». Les wireframes sont en mode mobile-first ; les ajustements desktop suivent en section 6.

4.1. HOME template



4.2. SOLUTION template (MY / FLEX / ACADEMY / +)



4.3. INDUSTRY template (Police / Special Forces / Military / Firefighters)

- └ Hero (dark, photographic full-bleed) —————┐
- └ The reality (frustrations + 4-5 stat callouts) ———┐
- └ The Asterion promise for this segment —————┐
- └ Relevant scenarios (4-6 image cards) —————┐
- └ Configurations recommended —————┐
- └ Case study from this segment (if available) ———┐
- └ Instructor testimonial —————┐
- └ Conversion (Demo CTA pre-filled with segment) ———┐
- └ Footer —————┐

4.4. TECHNOLOGY template (sub-page)

- └ Hero (technical illustration or in-engine still) —┐
- └ Description prose (2-3 paragraphs) —————┐
- └ Detailed specifications (bullet list / table) ———┐
- └ Demo video (30s loop, autoplay muted) —————┐
- └ Diagram or schema (illustration) —————┐
- └ Related solutions / industries (cards) —————┐
- └ Demo CTA —————┐
- └ Footer —————┐

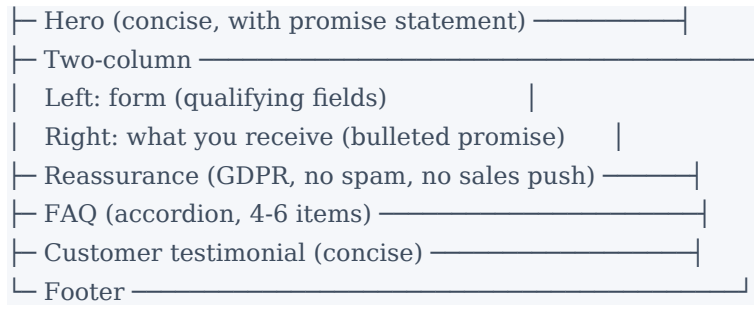
4.5. CASE STUDY template

- └ Hero (organization name + key metric callout) ———┐
- └ Context (problem, constraints) —————┐
- └ Deployed solution (config, options, scenarios) ———┐
- └ Deployment story (timeline, challenges) —————┐
- └ Results (3-5 stat callouts + instructor quote) ———┐
- └ Lessons learned —————┐
- └ "Want similar results?" → Demo CTA —————┐
- └ Related case studies (3 cards) —————┐
- └ Footer —————┐

4.6. BLOG POST template

- └ Article header (category + title + meta) —————┐
- └ Featured image (16:9 or 21:9) —————┐
- └ Body (max 720 px width, 16-20 px text-body-md) ———┐
 - | - Pull-quote blocks |
 - | - Inline images (full-width or inset) |
 - | - Code/table where relevant |
- └ Author bio card —————┐
- └ Newsletter CTA —————┐
- └ Related articles (3 cards) —————┐
- └ Footer —————┐

4.7. CONVERSION template (Demo / T&E / Quote)



5. Motion & interactions

La motion design doit signaler la précision et le contrôle. Aucune animation gratuite. Toutes les transitions respectent prefers-reduced-motion.

5.1. Easing & timing

```
/* Standard easing tokens */
```

```
--ease-default: cubic-bezier(0.16, 1, 0.3, 1); /* premium snap */
```

```
--ease-in: cubic-bezier(0.4, 0, 1, 1);
```

```
--ease-out: cubic-bezier(0, 0, 0.2, 1);
```

```
--ease-linear: linear;
```

```
/* Duration tokens */
```

```
--duration-instant: 100ms; /* micro-interactions */
```

```
--duration-fast: 150ms; /* button hover, focus */
```

```
--duration-default: 250ms; /* card hover, accordion */
```

```
--duration-slow: 400ms; /* modal, drawer */
```

```
--duration-deliberate: 600ms; /* hero animations */
```

5.2. Component motion

Buttons

- Hover: background darken + translateY(-1px), 150ms ease-default.
- Active: instant return to default, no transition.

Cards

- Hover: shadow-sm → shadow-md, translateY(-2px), 250ms ease-default.
- Image inside card may zoom 1.04x on hover (250ms).

Mega menu

- Open: fade-in + slide-down 4px, 200ms ease-out.
- Close: fade-out 100ms.

Mobile drawer

- Open: slide-in from right, 300ms ease-default.
- Close: slide-out, 250ms.

Modals

- Backdrop fade-in 200ms, modal scale 0.96→1.0 + fade-in 250ms ease-default.

Toast

- Slide-in from right (top on mobile), 300ms ease-default.

Accordion

- Max-height transition 250ms ease-default.

- Chevron rotation 250ms ease-default.

5.3. Scroll-triggered motion

- Sections fade-in + slide-up 16px on entry into viewport (IntersectionObserver, threshold 0.15).
- Duration 600ms, ease-default. Trigger once.
- Stat callouts: count-up animation from 0 to target (1000ms ease-out).
- Hero text: stagger reveal (eyebrow + headline + subheadline + CTAs each delayed 100ms).

5.4. Hero video specs

- Duration: 25-35 seconds, looping seamlessly.
- Format: MP4 (H.264 + H.265 source), WebM (VP9) for fallback.
- Resolution: 1920×1080 minimum, 3840×2160 for retina.
- Audio: muted (no audio track in source for smaller file).
- File size budget: < 2 MB for the looping clip.
- Poster image: high-quality JPG (~150 KB) shown until video loads.
- Autoplay: yes, muted, plays-inline, loop.
- On slow connection: fallback to static hero image.

5.5. Reduced motion

```
@media (prefers-reduced-motion: reduce) {  
  *, *::before, *::after {  
    animation-duration: 0.01ms !important;  
    animation-iteration-count: 1 !important;  
    transition-duration: 0.01ms !important;  
  }  
  /* Disable hero video autoplay, show poster image instead */  
}
```

6. Responsive behavior

6.1. Breakpoints

Breakpoint	Min-width	Target devices
xs	0	Mobile portrait (375 px reference)
sm	640 px	Mobile landscape, small tablets
md	768 px	Tablet portrait
lg	1024 px	Tablet landscape, small laptop
xl	1280 px	Desktop default
2xl	1536 px	Large desktop

6.2. Responsive patterns

Header

- xs-md: hamburger menu, logo left, primary CTA hidden (move to drawer).
- lg+: full horizontal nav, primary CTA visible.

Hero

- xs-md: text stacked, full width, video as background, height 70-80vh.
- lg+: hero may switch to text-left + video-right layout, height 90vh.

Card grids

- xs: 1 column.
- md: 2 columns (for 4-card grids), 1 column (for 3-card grids if cards are large).
- lg+: 3 or 4 columns depending on grid intent.

Tables

- xs-md: stack rows as cards. Hide columns whose data is secondary.
- lg+: full table.

Footer

- xs-md: stack columns into accordion sections.
- lg+: 5 columns side by side.

Forms

- xs: full-width inputs, button full-width.
- lg+: 2-column where appropriate, button auto-width.

6.3. Touch targets

- Minimum tap target: 44×44 px (WCAG AA recommendation, Apple HIG standard).
- Spacing between tap targets: minimum 8 px.

6.4. Mobile-specific considerations

- Sticky bottom CTA on industry and solution pages (mobile only): 56 px tall, full-width Demo CTA.
- Phone numbers: clickable tel: links.
- Email addresses: clickable mailto: links.
- Hover states: must have non-hover equivalent (focus, active, or always visible).

7. Accessibility (WCAG 2.1 AA)

7.1. Color contrast

- Body text on light bg: 4.5:1 minimum (color-text-secondary on white = ~9.5:1 ✓).
- Large text (≥ 18.66 px regular, 14px bold): 3:1 minimum.
- UI elements (icons, borders): 3:1 against adjacent colors.
- Gold (#C9A45A) on navy (#0B1F3A): 5.5:1 ✓.
- Navy text on white: 13.4:1 ✓.
- White text on navy: 13.4:1 ✓.

7.2. Keyboard navigation

- Every interactive element must be reachable by Tab and operable by Enter / Space.
- Focus order: logical, follows visual reading order.
- Focus indicator: visible on every focusable element. Default: 2 px outline color-info, 2 px offset, no removal of native outline without replacement.
- Skip link: « Skip to main content » as the first focusable element on every page.
- Mega menu: Tab into, Arrow keys navigate, Escape to close, Tab out to next nav item.
- Modal: focus trapped within, Escape closes, focus restored on close.

7.3. Screen reader support

- Semantic HTML: use <header>, <nav>, <main>, <article>, <section>, <aside>, <footer>.
- Heading hierarchy: one <h1> per page (H1 = page hero), no skipped levels.
- Landmarks: ARIA landmarks where necessary (role="banner", role="navigation", etc.).
- Alt text on every meaningful image. Decorative images: alt="" with role="presentation".
- ARIA labels on icon-only buttons (e.g., aria-label="Close" on X button).
- Form labels: associated via for/id or wrapped <label>.
- Error messages: associated via aria-describedby.
- Live regions: aria-live="polite" for non-critical updates (toast), aria-live="assertive" for critical.

7.4. Forms

- Every input has a visible label.
- Required fields marked visually AND with aria-required="true".
- Error messages: visible, associated with input, not color-only.
- Invalid input: aria-invalid="true".

7.5. Multimedia

- Hero video: muted by default. No essential information in video-only (always supplemented by text).
- Other videos: captions in EN and FR (at minimum on customer-facing videos).
- Audio descriptions: where the video conveys important visual information not in the audio.

7.6. Language

- HTML lang attribute set on root `<html lang="en">` or `<html lang="fr">`.
- Inline language changes marked with lang attribute on the relevant element.

7.7. Testing

- Automated: axe-core in development and CI.
- Manual: keyboard-only navigation pass on every template, screen reader pass (NVDA + VoiceOver) before launch.
- Real-user feedback: include accessibility in user testing if possible.

8. Implementation notes

8.1. Stack recommandée (rappel — détail dans le livrable 1)

- Frontend : Next.js 14+ (React 18+) en mode app router, avec Static Generation + ISR.
- Styling : Tailwind CSS avec configuration custom alignée sur les tokens définis ici, OU CSS Modules avec variables CSS.
- CMS headless : Sanity (recommandé) ou Strapi (auto-hébergé pour souveraineté maximale).
- Hébergement : Vercel ou OVHcloud (français).
- Forms : intégration directe avec votre CRM (Hubspot / Pipedrive / autre) ou via service comme Formspree (RGPD-compliant).
- Analytics : Plausible (RGPD-natif, no cookie consent required).
- Search : Algolia DocSearch (gratuit pour open content) ou search côté client basé sur le CMS.

8.2. Performance budget

- Lighthouse Performance ≥ 90 (mobile et desktop).
- LCP < 2.5s, CLS < 0.1, TBT < 200ms.
- Total JS bundle (initial) < 200 KB gzipped.
- Total CSS < 50 KB gzipped.
- Hero video < 2 MB.
- Hero poster image < 150 KB.
- Other images: lazy-loaded, modern formats (AVIF/WebP) with JPG fallback.

8.3. Asset specifications

Logos

- SVG (preferred) + PNG fallback at 1x, 2x, 3x for non-SVG contexts.
- Versions: full color (navy + gold), monochrome white, monochrome navy.

Icons

- Library : Lucide (open-source, clean, comprehensive).
- Stroke width: 1.5 px.
- Sizes: 16, 20, 24, 32, 40 px.
- Inline SVG (not icon font), tree-shakeable.

Photography

- Format: AVIF + WebP + JPG fallback.
- Hero images: 2400×1350 (16:9) at 80% quality.
- Card images: 800×600 (4:3) at 80% quality.
- Thumbnails: 400×300 at 80% quality.

Video

- Hero loop: MP4 (H.264) + WebM (VP9), max 2 MB, 1920×1080.

- Demo videos: MP4 (H.264) + HLS for adaptive streaming if > 10 MB.
- Captions: WebVTT files, EN and FR, hosted alongside video.

8.4. SEO checklist (résumé)

- Sitemap XML auto-generated and submitted to Google Search Console.
- Schema.org structured data: Organization, Product, Article, FAQPage, BreadcrumbList.
- Open Graph meta tags on every page (og:title, og:description, og:image, og:url, og:type).
- Twitter Card meta tags.
- Hreflang on every translated page.
- Canonical URL on every page.
- Robots.txt allowing crawl, disallowing only /api/ and dev paths.
- Custom 404 page on-brand.
- 301 redirect map from old WordPress URLs to new URLs.

8.5. Internationalization

- EN as default, FR as initial second language.
- URL strategy: path-based (/en/ and /fr/) — recommended for SEO clarity.
- Strings stored in CMS or in JSON files per language.
- Date and number formatting via Intl API.
- Right-to-left support: not required initially, but design tokens should not assume LTR (flex with start/end logical properties).

8.6. Cookie & consent

- Recommandation : Plausible Analytics ne nécessite pas de bandeau cookie.
- Si Hubspot ou autre tracking via cookies est intégré : bandeau de consentement RGPD-compliant (Klaro, Cookiebot, ou solution maison).
- Le bandeau doit avoir un bouton « Refuser » au même niveau visuel que « Accepter ».
- Consentement granulaire (analytics / marketing / functional).

8.7. Sécurité

- HTTPS only (HSTS preload).
- Content Security Policy (CSP) configurée pour limiter les sources externes.
- X-Frame-Options: DENY.
- Referrer-Policy: strict-origin-when-cross-origin.
- Permissions-Policy: limiter l'accès aux APIs sensibles (camera, microphone, geolocation).

9. Closing

Ce document constitue une base de design system. Il évoluera : à chaque nouveau composant ou pattern adopté, il devrait être mis à jour. La cohérence du site dépend de la rigueur avec laquelle l'équipe (designer + dev) y revient.

Pour toute question : repartir des tokens, ne jamais hardcoder, et garder en tête le principe : la marque dit le sérieux, le composant dit la précision.

Fin du document — Asterion VR · Design Handoff Specification