



Creating Accessible Design Systems

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Meet Karen Hawkins



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Today's Goals

1. Demystify who is responsible for which accessibility requirements in a design system.
2. Learn the design system features where designers control the accessibility but maintain design freedom and flexibility.
3. Through examples, learn some accessibility design and documentation responsibilities for designers and content creators.

SECTION 1

Accessible Design in Design Systems

“

A design system is a complete set of standards intended to manage design at scale using reusable components and patterns.

”

NN/g Niesen Norman Group

“

A **design system** is a complete set of standards intended to manage design at scale using reusable components and patterns.

NN/g Niesen Norman Group

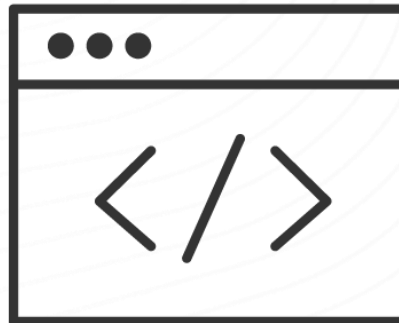
”

Design System Composition

A design system is comprised of reusable design elements, reusable coded elements, and their documentation.



Design



Code



Documentation

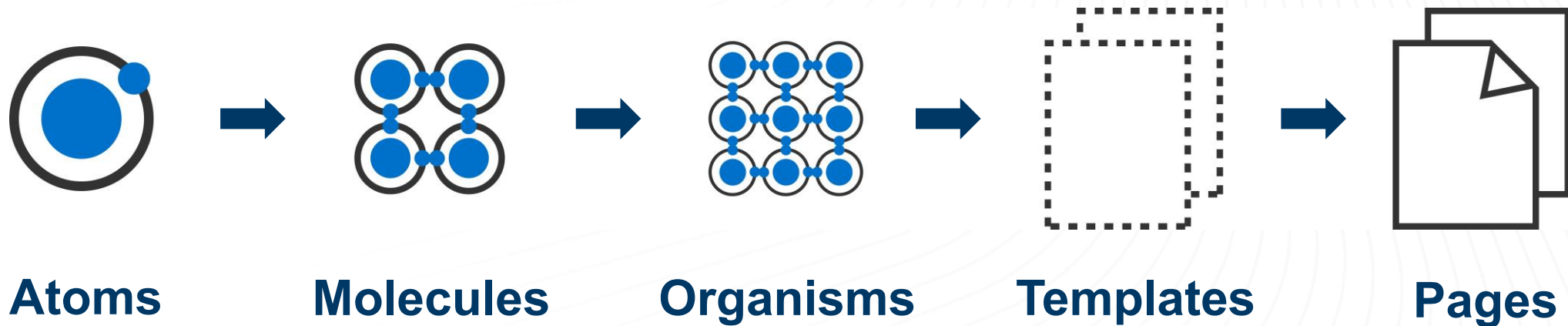
Consistency

Efficiency

Scale

Atomic Design

Atomic design is a methodology for creating design systems. It is a framework to break interfaces down into fundamental reusable building blocks and build them back up in potentially infinite variations.



Atomic Breakdown of a Button

Atoms

Button



Molecule

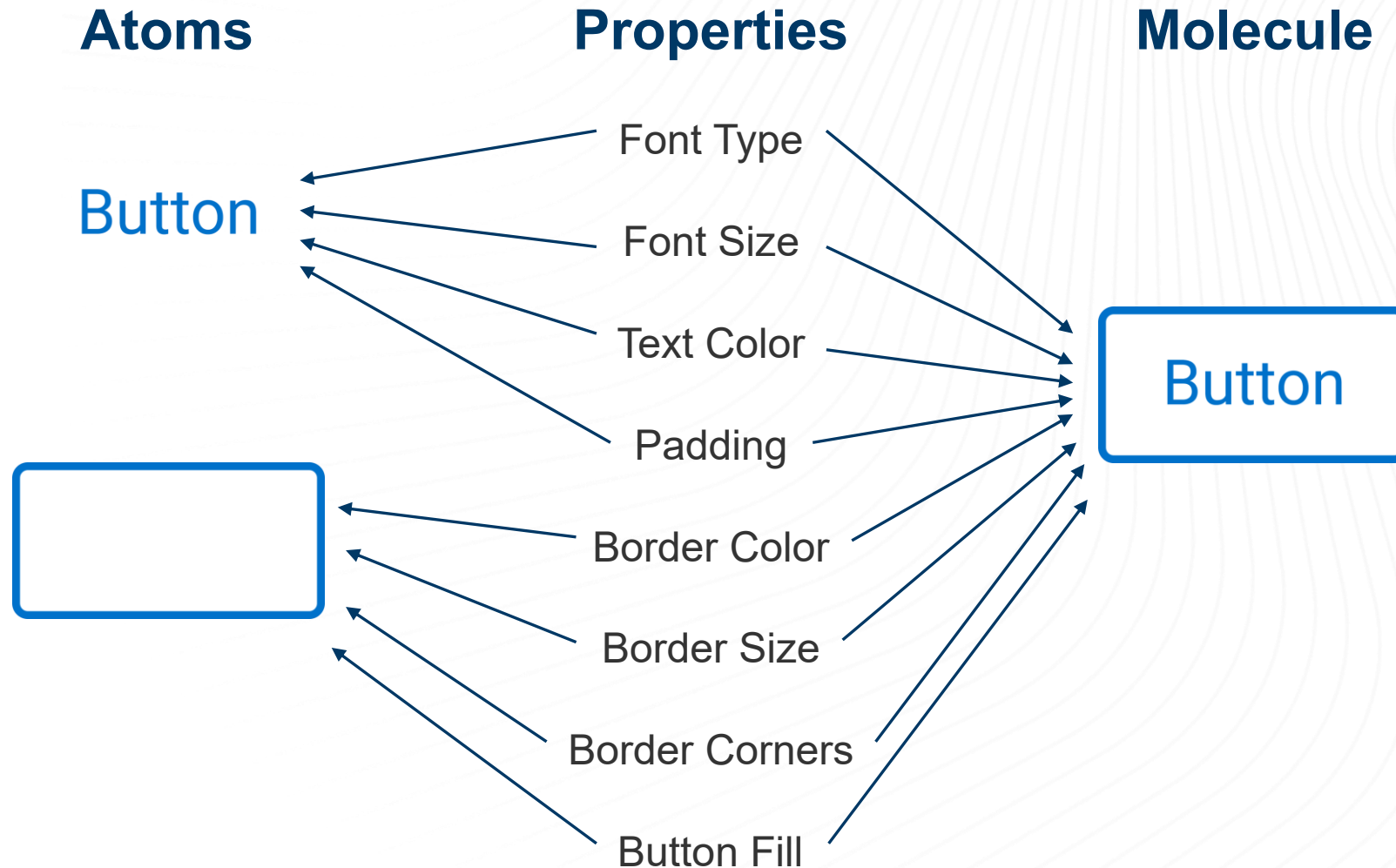
Button



Atomic Breakdown of a Button: Further Analysis

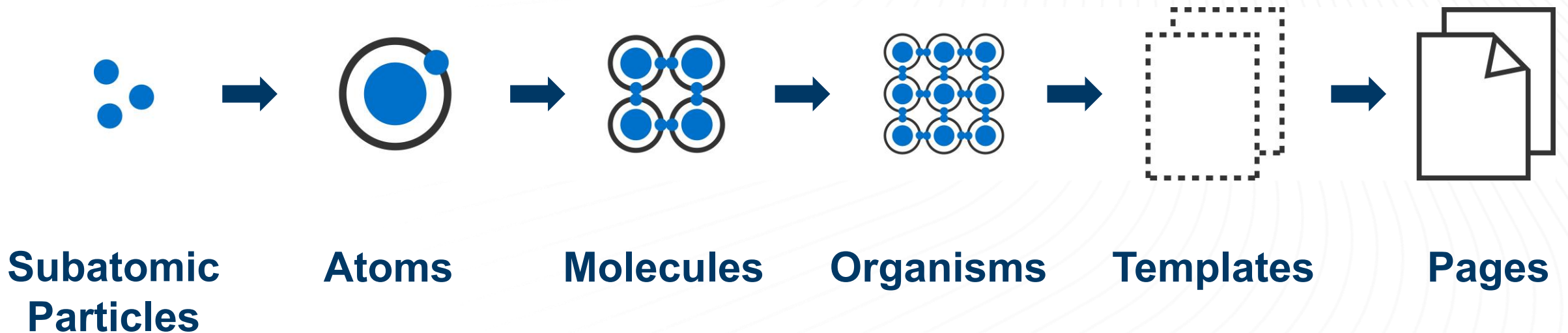


LEVEL
access

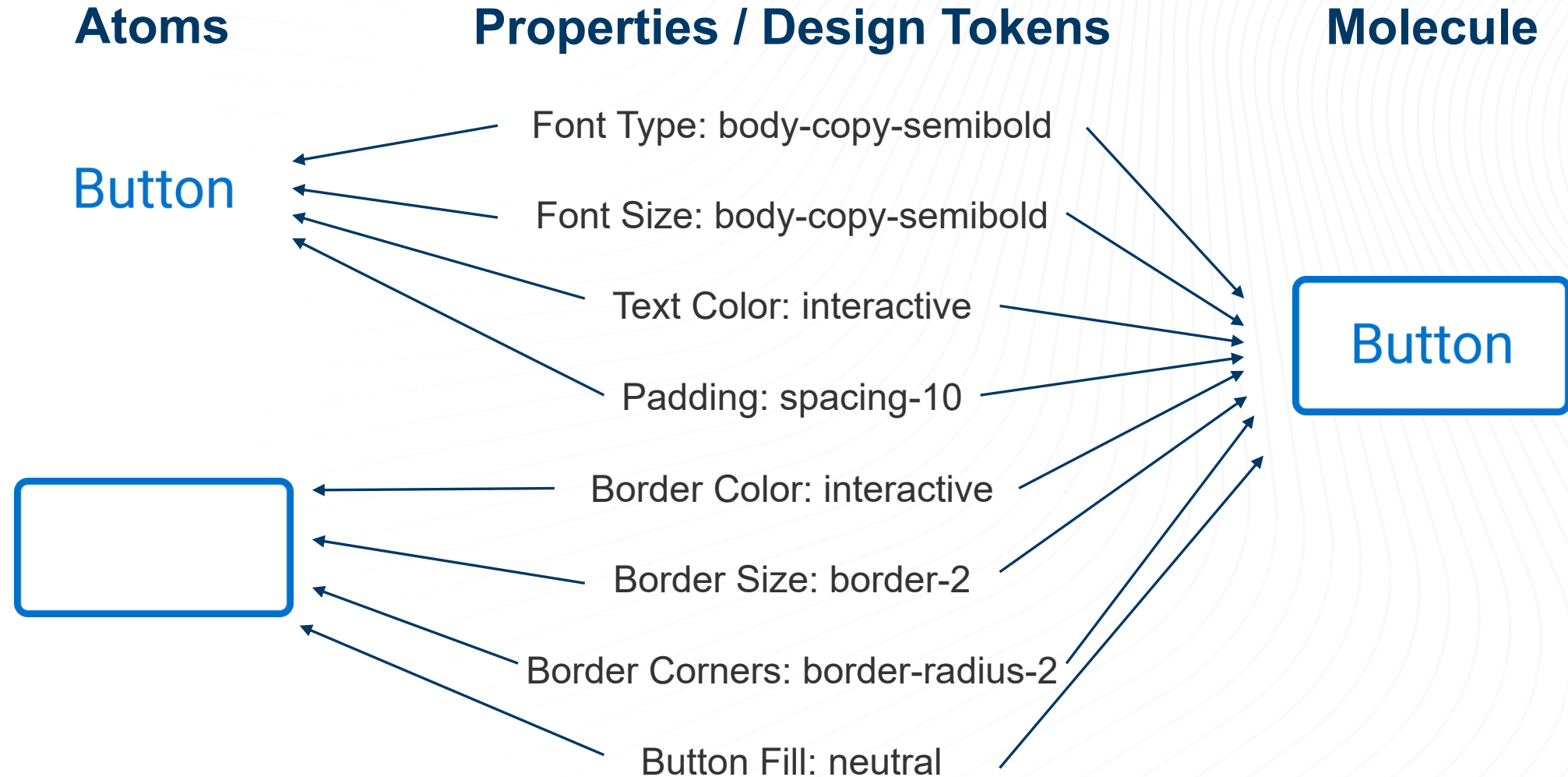


Subatomic Design

Design tokens are small, repeatable design decisions, that store a design system's visual attributes. They ensure the same style values are used across design files and code.



Subatomic Breakdown of a Button



Design Systems Tend to be Incomplete

Molecule

Postal Code

Molecular Variations and States

Default / Unpopulated

Postal Code

Focused / Typing

Postal Code

Optional Field

Postal Code (Optional)

Focused / Typing / Formatted

Phone Number

Instructional Text / Unpopulated

Date

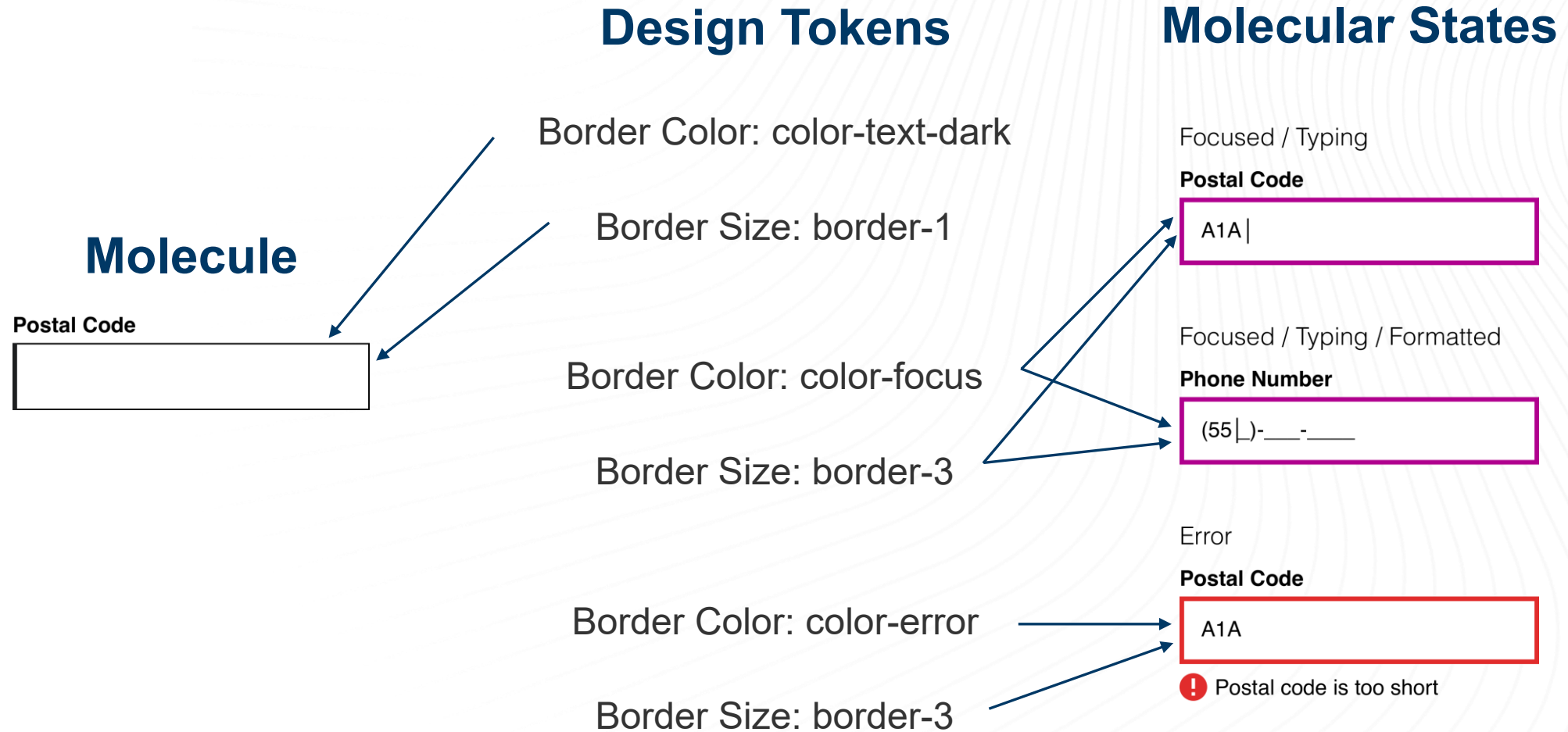
DD / MM / YYYY

Error

Postal Code

! Postal code is too short

Design Tokens Fill Much of the Gap



Remaining Gaps are Filled with Other Aspects of Design and Documentation

Other Elements

Molecule

Postal Code

Molecular States

Focused / Typing

Postal Code

Focused / Typing / Formatted

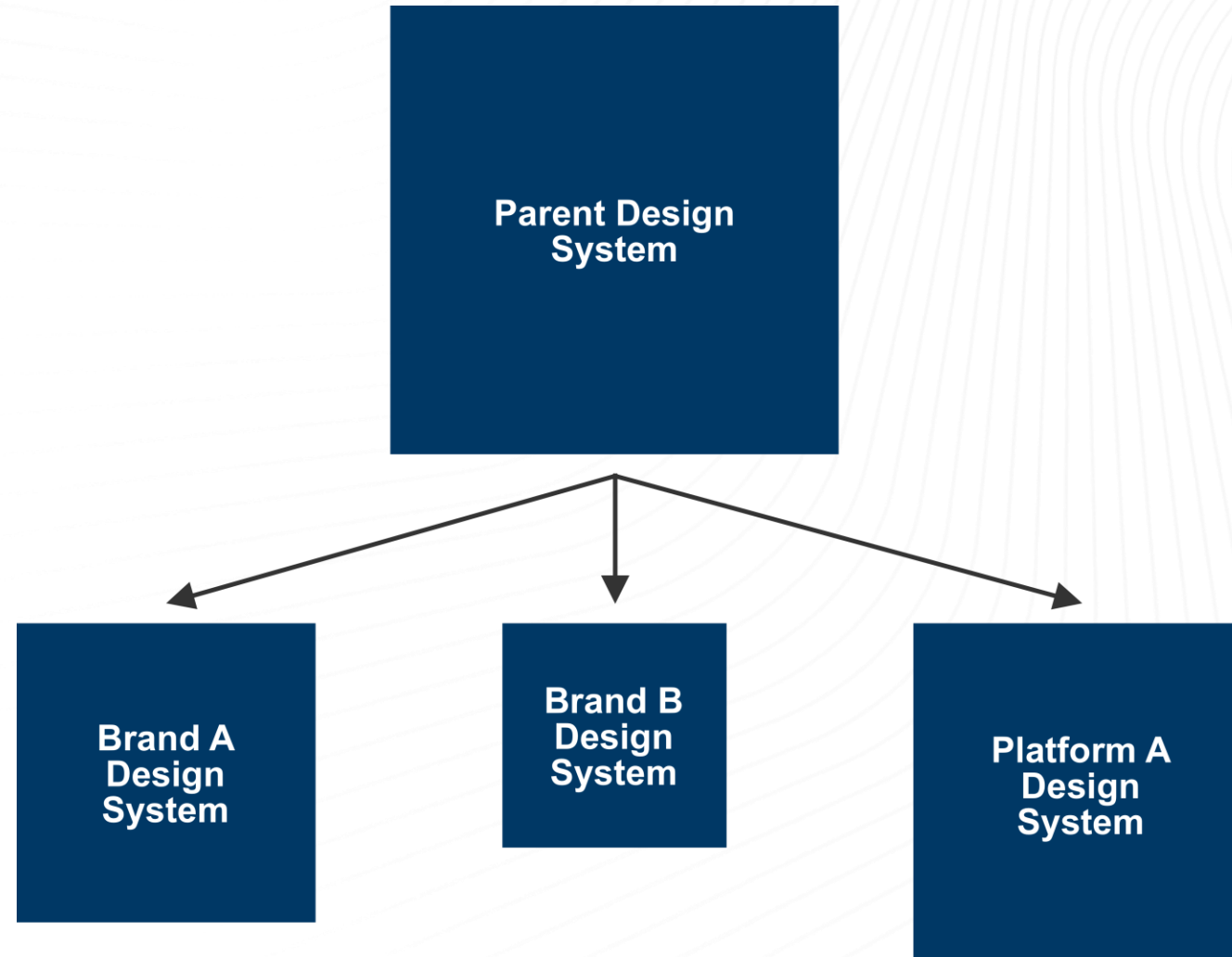
Phone Number

Error

Postal Code

Error message with icon →  Postal code is too short

Design System Inheritance



Inheritance Examples (1 / 2)

Parent

Default

Postal Code

Border Thickness: 1px
Border Color: #333333
Corner Radius: 0

Focused / Typing

Postal Code

A1A|

Border Thickness: 3px
Border Color: #333333
Corner Radius: 0

Child 1

Default

Postal Code

Border Thickness: 1px
Border Color: #333333
Corner Radius: 0

Focused / Typing

Postal Code

A1A|

Border Thickness: 3px
Border Color: #B0008E
Corner Radius: 0

Child 2

Default

Postal Code

Border Thickness: 1px
Border Color: #002D04
Corner Radius: 0

Focused / Typing

Postal Code

A1A|

Border Thickness: 5px
Border Color: #002D04
Corner Radius: 0

Child 3

Default

Postal Code

Border Thickness: 3px
Border Color: #413B94
Corner Radius: 0

Focused / Typing

Postal Code

A1A|

Border Thickness: 1px
Border Color: #413B94
Corner Radius: 0

Inheritance Examples (2 / 2)

Parent

Default

Postal Code

Border Thickness: 1px
Border Color: #333333
Corner Radius: 0

Focused / Typing

Postal Code

A1A|

Border Thickness: 3px
Border Color: #333333
Corner Radius: 0

Child 4

Default

Postal Code

Border Thickness: 1px
Border Color: #333333
Corner Radius: 8

Focused / Typing

Postal Code

A1A|

Border Thickness: 3px
Border Color: #333333
Corner Radius: 8

Child 5

Default

Postal Code

Border Thickness: 1px
Border Color: #333333
Corner Radius: 8

Focused / Typing

Postal Code

A1A|

Border Thickness: 3px
Border Color: #333333
Corner Radius: 0

Child 6

Default

Postal Code

Border Thickness: 1px
Border Color: #333333
Corner Radius: 0

Focused / Typing

Postal Code

A1A|

Border Thickness: 1px
Border Color: #333333
Corner Radius: 0

Style Guides Map to Atoms and Subatomic Particles

Focus on tokens

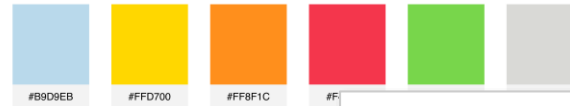


Colours

Primary Colours



Secondary Colours



Conformant Colours on a White Background

The following colours were identified in our in our contrast audit as conformant with WCAG 2.1 AA for normal text, large text, graphical objects and user interface components.



The following colour was identified in our in our contrast audit as conformant with WCAG 2.1 AA for large text, graphical objects and user interface components.

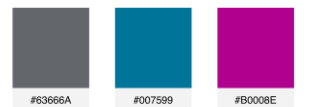


Conformant Colours on a Black Background

The following colours were identified in our in our contrast audit as conformant with WCAG 2.1 AA for normal text, large text, graphical objects and user interface components.



The following colours are at least WCAG 2.1 AA conformant with WCAG 2.1 AA for normal text, large text, graphical objects and user interface components.



Conformant Colours on both a White and a Black Background

The following colours were identified in our in our contrast audit as conformant with WCAG 2.1 AA for large text, graphical objects and user interface components.

Typography

Desktop

Headline One Large

Helvetica / black / bold / 100px / 105 line height

Mobile

Headline One Large Mobile

Helvetica / black / bold / 50px / 52 line height

Headline One

Helvetica / black / bold / 80px / 85 line height

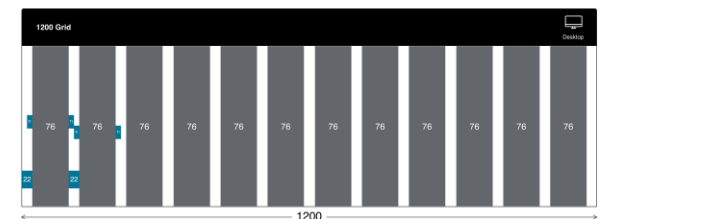
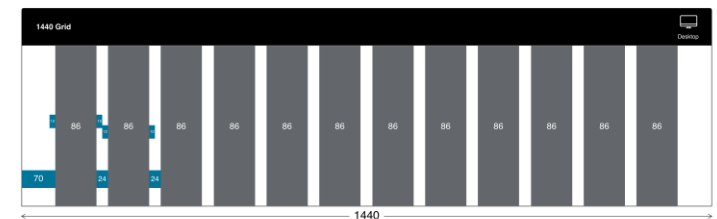
Headline Two

Helvetica / black / bold / 60px / 64 line height

Headline Three

Helvetica / black / bold / 38px / 42 line height

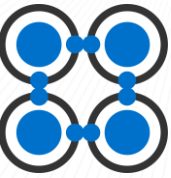
Grid



Components Map to Molecules

Focus on foundational aspects:

- States
- Variations
- Keyboard interactions
- Screen reader experiences
- Etc.



This link is an [inline link](#) in the middle of some text.

Button

Button

 Button

Checkbox group *

Instructions

- ☐ Select all
- ☐ Label
- ☒ Selected label
- ☐ Label
- ☒ Selected label
- ☐ Label
- ☒ Selected label
- ☐ Label
- ☒ Selected label

Radio button group *

Instructions

- ☐ Label
- ☒ Selected label
- ☐ Label
- ☒ Selected label
- ☒ Selected label
- ☐ Label

Select label *

Instructions

Select an option 

Label *

Instructions

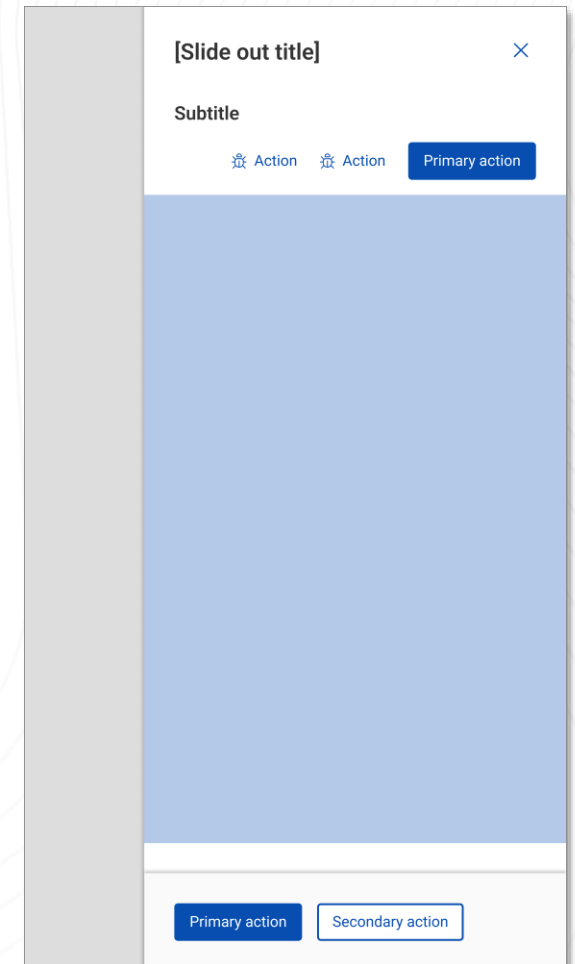
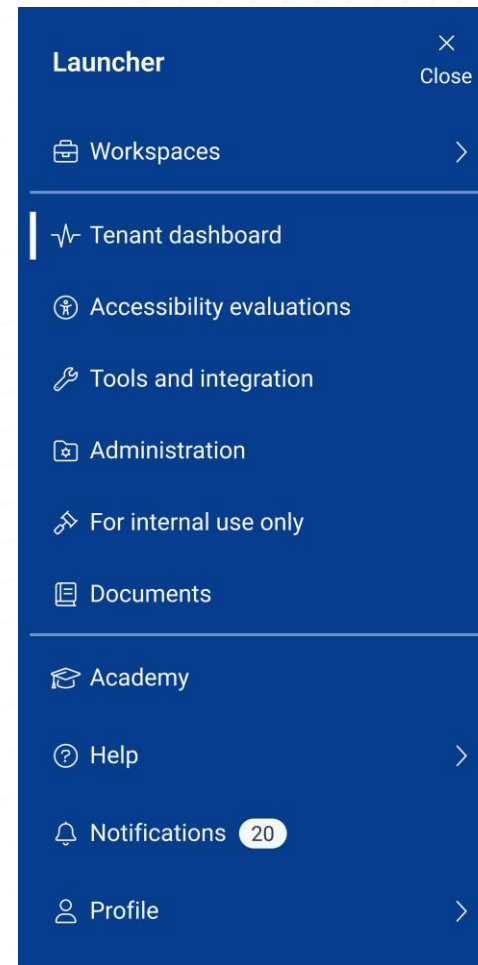
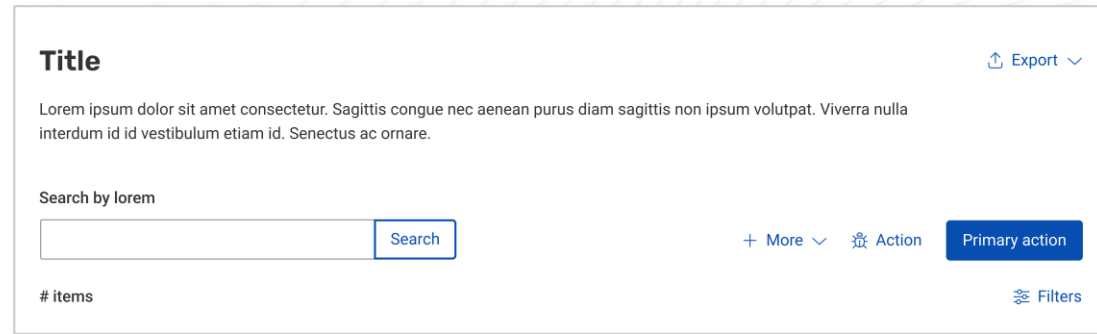
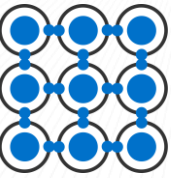
Text

0/###

Patterns Map to Organisms

Focus on higher order thinking:

- Reading order
- Landmarks
- Skip links
- Interdependencies between multiple components
- Etc.



SECTION 2

Digital Accessible Design Roles and Responsibilities

Digital Design Roles (aka Functions)



**User Experience
(UX) Designer**



**User Interface
(UI) Designer**



Content Designer

Synonyms and Responsibilities: User Experience Designer



**User Experience
(UX) Designer**

Synonyms

- Information Architect
- Interaction Designer
- Experience Designer
- UX Strategist
- UX Architect
- Product Designer
- Service Designer

Responsibilities

- Architecture
- Structure
- Logic
- Flow
- Navigation
- Wayfinding
- Interaction
- Behavior

Synonyms and Responsibilities: User Interface Designer



**User Interface
(UI) Designer**

Synonyms

- Art Director
- Visual Designer
- Graphic Designer
- Graphic Artist
- UI Artist
- Interaction Designer
- Product Designer
- Digital Designer

Responsibilities

- Brand
- Styling
- Look and feel
- Color
- Typography
- Imagery and illustrations
- Layout and grid
- Motion and animation

Synonyms and Responsibilities: Content Designer



Content Designer

Synonyms

- Content Strategist
- Copywriter
- UX Writer
- Content Writer
- Technical Writer
- Marketing Technologist
- Content Marketing Manager
- Digital Brand Manager
- Digital Marketing Manager
- Social Media Coordinator
- Community Manager

Responsibilities

- Content strategy
- Content audit
- Content governance
- Tone, style and voice
- Writing copy
- Editing copy

Not Discussed

Researcher

Product Manager

Developer

Quality Assurance

Design System Responsibilities: User Experience Designer



User Experience (UX) Designer

Design

- Required structural elements
- Multitude of navigational strategies
- Orientation cues
- Consistent designs and locations
- Content flow and hierarchy
- Error prevention, support, and remediation
- Alternative interactions and experiences
- Redundant coding

Documentation

- Keyboard interactions
- Pointer interactions
- Screen reader experiences
- Roles
- Behaviors
- Error handling
- Rules for optional design elements
- Rules for structural elements

Design System Responsibilities: User Interface Designer



**User Interface
(UI) Designer**

Design

- Color, typography, spacing, imagery, illustrations, layout, grid, motion, animation
- Component variations
- Component states
- Target sizes
- Visual hierarchy and relationships
- Viewports

Documentation

- Rules for:
 - Color usage
 - Spacing
 - Images and illustrations
 - Motion and animation
 - How elements respond
- Breakpoints

Design System Responsibilities: Content Designer



Content Designer

Design

N/A

Documentation

- Copy
- Content hierarchy
- Standardized messages
- Digital property language
- Digital property glossary / definition list, etc.
- Rules for:
 - Abbreviations
 - Pronunciations
 - Plain language
 - Minimal grade reading level
 - Alternative text

**It doesn't matter what your
job title is.**

**It doesn't matter how your
team is structured.**

Someone has to own the accessibility requirements.

1. Understand what the requirements are.
2. Know how to design for them.
3. Assign the task to the appropriate function.

Some Accessible Design Requirements

Button Example

Example Button Types

Primary



Secondary



Tertiary



Example Primary Button Versions

Text Only



Text and Icon



Icon Only



Example Primary Button States

Default



Hover



Focus



Inactive



**Clicked /
Pressed**



Accessible Design Responsibilities: Primary Button Default State Example



Function	Accessible Design Responsibilities
User Experience Designer	<ul style="list-style-type: none">• Has a visible label
User Interface Designer	<ul style="list-style-type: none">• Minimum contrast:<ul style="list-style-type: none">◦ Text color to button color◦ Button color (or border color) to background color• Minimum target size• Desktop and mobile versions• Pressure test:<ul style="list-style-type: none">◦ Text at 200%◦ Letter spacing not likely to cause readability issues◦ Word spacing not likely to cause readability issues◦ Line spacing not likely to cause readability issues• Minimum font size (best practice)• Font type not likely to cause readability issues (best practice)• Button design visually conveys it is a button (best practice)
Content Designer	N/A

Primary Button Minimum States

Default

Hover

Focus

Inactive

Desktop



Mobile



Primary Button Minimum States with an Icon



Default

Hover

Focus

Inactive

Desktop



Mobile












Primary Button Additional States: 200% Text and Long Text



	200% Text	200% Text with Chevron	Long Text	Long Text with Chevron
Desktop				
Mobile				

Button Type States

	Default	Hover	Focus
Primary			
Secondary			
Tertiary			

Link Type States

Default

Hover

Focus

Standalone

Standalone Link

Standalone Link

Standalone Link

Inline

This link is an inline link in the middle of some text.

This link is an inline link in the middle of some text.

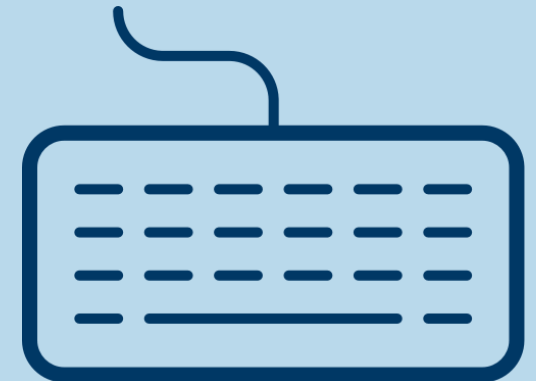
This link is an inline link in the middle of some text.

Sidebar: Design Consistency Across Device Usage

Pointer / Hover



Keyboard / Focus



Some Accessible Documentation Requirements

Button Example

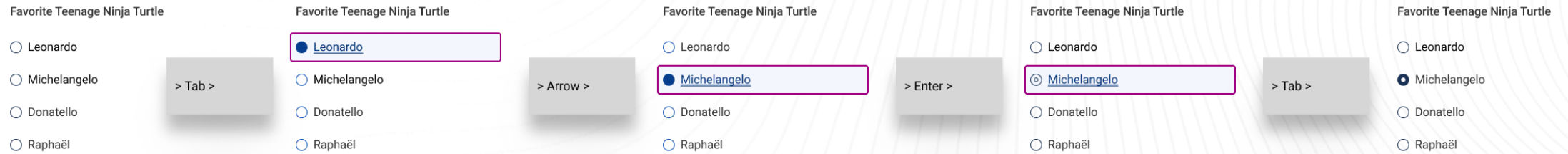
Accessible Documentation Responsibilities: Primary Button Example

Button

Function	Accessible Documentation Responsibilities
User Experience Designer	<ul style="list-style-type: none">• Role• Keyboard interactions• Screen reader experience• Abort activation:<ul style="list-style-type: none">◦ With a keyboard◦ With a pointer device
User Interface Designer	<ul style="list-style-type: none">• Colors included in button design and their contrast ratios• Font type, size, and spacing rules• Character count• How the button grows with text• Target size
Content Designer	<ul style="list-style-type: none">• Label text

Interactions: Radio Button Example

Keyboard



Pointer



Interactions: Checkbox Example

Keyboard

Favorite Teenage Ninja Turtle

☐ Select all

☐ Leonardo

☐ Michelangelo

☐ Donatello

☐ Raphaël

> Tab >

Favorite Teenage Ninja Turtle

☒ [Select all](#)

☐ Leonardo

☐ Michelangelo

☐ Donatello

☐ Raphaël

> Tab >

Favorite Teenage Ninja Turtle

☐ Select all

☒ [Leonardo](#)

☐ Michelangelo

☐ Donatello

☐ Raphaël

> Enter >

Favorite Teenage Ninja Turtle

☐ Select all

☒ [Leonardo](#)

☐ Michelangelo

☐ Donatello

☐ Raphaël

> Tab >

Favorite Teenage Ninja Turtle

☐ Select all

☒ Leonardo

☒ [Michelangelo](#)

☐ Donatello

☐ Raphaël

Pointer

Favorite Teenage Ninja Turtle

☐ Select all

☐ Leonardo

☐ Michelangelo

☐ Donatello

☐ Raphaël

> Hover >

Favorite Teenage Ninja Turtle

☐ Select all

☒ [Leonardo](#)

☐ Michelangelo

☐ Donatello

☐ Raphaël

> Click >

Favorite Teenage Ninja Turtle

☐ Select all

☒ Leonardo

☐ Michelangelo

☐ Donatello

☐ Raphaël

> Hover >

Favorite Teenage Ninja Turtle

☐ Select all

☒ Leonardo

☒ [Michelangelo](#)

☐ Donatello

☐ Raphaël

> Click >

Favorite Teenage Ninja Turtle

☐ Select all

☒ Leonardo

☒ Michelangelo

☐ Donatello

☐ Raphaël

48

Keyboard Interactions:

- On focus / on input
- Taking an action (selecting, expanding, etc.)
- Navigating within and between components

Auditory Experience Example

[Field label] *

[Instructions] [0/###]

By default the field is empty.

The user tabs into the field.

[Field label] *

[Instructions] [0/###]

The field receives focus and the cursor is visible in the field.

The screen reader announces:

- [Field label]
- Required field or not
- [Instructions] (if applicable)
- [Character count] (if applicable)

The user starts typing their answer.

[Field label] *

[Instructions] [0/###]

The field keeps the focus.

The screen reader announces the letter as soon as it is typed.

The user continues typing...

[Field label] *

[Instructions] [0/###]

The text input is populated.

The screen reader reads the full text when the user pauses typing.

The user tabs to the next field...

Screen Reader Experiences:

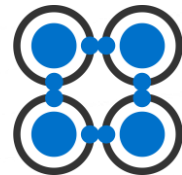
- Content serialized / linearized
- Element uniqueness / differentiation
- Element context

Summary

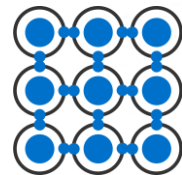
Designer Accessibility Foci



Atom



Molecule



Organism



Designs

All permutations as to what it looks like



Design Documentation

All expectations about how it works and how it behaves

Questions?



Thank you

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