

University of M'sila

Faculty of Mathematics and Computer Science

Department of Computer Science

Information Architecture

Academic Year 2025-2026

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Introduction to Information Architecture

- **Definition**

- Information Architecture (IA) is the practice of organizing, structuring, and labeling content so that users can find information easily and complete tasks efficiently.

Introduction to Information Architecture

- **Historical Background**

- The term "Information Architect" was popularized by Richard Saul Wurman, who described IA as making the complex clear.
- IA became central to web design through the work of:
 - Peter Morville
 - Louis Rosenfeld
- Their foundational book:
- Information Architecture for the World Wide Web
- (Often called "The Polar Bear Book")

Why Information Architecture Matters

- **Without IA:**
 - Users get lost
 - Navigation feels confusing
 - Search fails
 - Content becomes overwhelming
 - Conversion rates drop
- **With strong IA:**
 - Users find information quickly
 - Cognitive load is reduced
 - Trust increases
 - Business goals are supported
- Think about large platforms like: Amazon ,Wikipedia

IA vs UX vs UI

- IA : Structure & organization , Ex website sitemap
 - UX : Overall experience, Ex: checkout process
 - UI: Visual interface, Buttons , colors
-
- ▶ IA happens before visual design.

Core Components of Information Architecture

- There are four main systems:
 - 1) Organization Systems** :How content is grouped.
 - 2) Labeling Systems**: How content is named.
 - 3) Navigation Systems**: How users move through content.
 - 4) Search Systems**; How users find content directly.
- These systems work together.

Core Components of Information Architecture: *Organization Systems*

- How information is grouped and structured
- **Types of Website Structures**
 - Hierarchical (Tree structure)
 - Sequential
 - Matrix
 - Database-driven

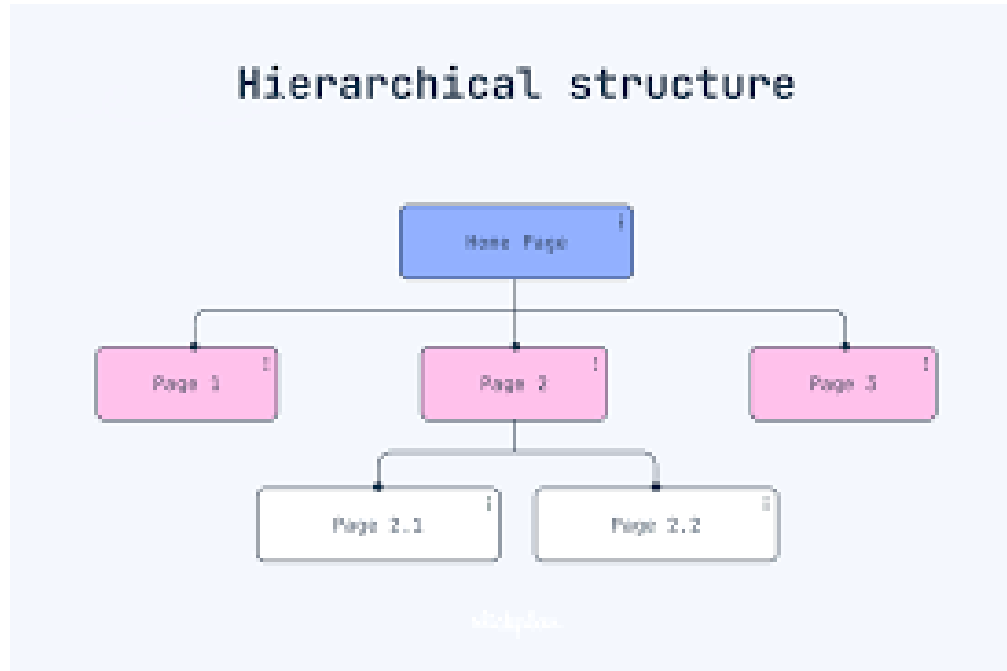
Core Components of Information Architecture: *Organization Systems*

1. Hierarchical Structure (Tree Model)

- Most common structure.
- Parent → Child → Sub-child
- Clear top-down logic
- Used in most websites
- ✓ Easy to understand
- ✗ Can become deep and complex

Core Components of Information Architecture: *Organization Systems*

1. Hierarchical Structure (Tree Model)



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Message from the Chief Executive
Officer of Algérie Télécom
Legal Notices
Contact us
Personal Data Protection Policy

Personal

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IDOOM 4GLTE
Online services

Business

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IDOOM FIBRE
Startup
Pack MOOHTARIF
Videoconference
Web Hosting

Others

Press Center
Interconnection catalogue
Invitation to tender
Consultation Notices
List of excluded companies

Core Components of Information Architecture: *Organization Systems*

1. 2. Sequential Structure

Content arranged step-by-step.

Used for:

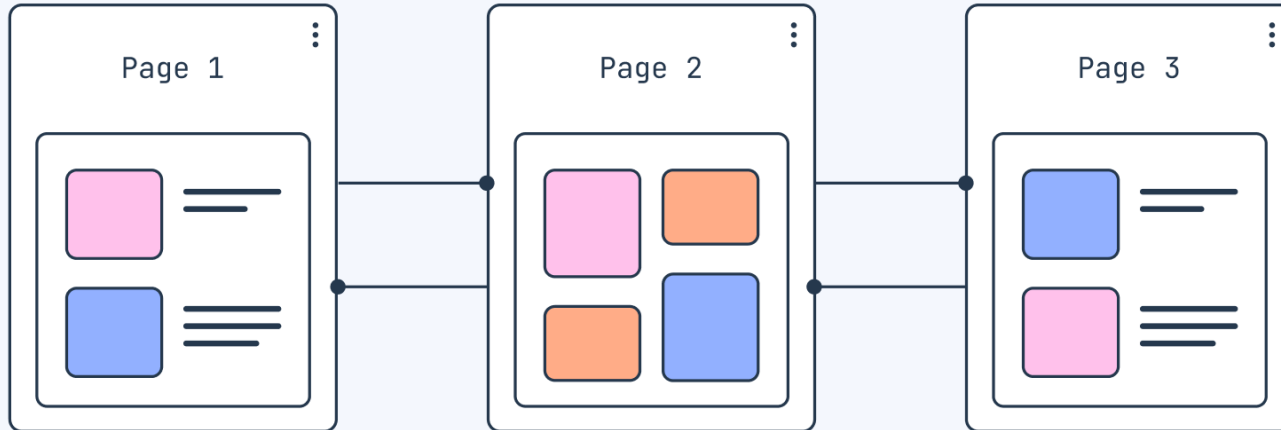
- Checkout flows
- Onboarding Courses

Example: Step 1 → Step 2 → Step 3 → Confirmation

✓ Good for guided tasks

Core Components of Information Architecture: *Organization Systems*

Sequential structure



Core Components of Information Architecture: *Organization Systems*



1. Select - FLIGHTS

[1 Select](#)[2 Book](#)[3 Pay](#)

Please select your flight. The lowest price is indicated by this symbol: 
Prices are for all travellers and include taxes.

Your search

On **Wed 15 Apr**
Algiers, Houari Boumediene (ALG) → **Istanbul, All airports (IST)**

[Modify search](#)

Please select departure flight

Algiers

Houari Boumediene (ALG)



Istanbul

Istanbul Airport (IST)



Wed 15 Apr

APRIL 2026



2

MON 13

TUE 14

WED 15

THU 16

FRI 17



Your booking +

1 Traveller
1 Adult

Wed 15 Apr 2026

CONTINUE



[Booking details](#)



[Fare notes](#)



Core Components of Information Architecture: *Organization Systems*

3. Matrix Structure: a Matrix Structure means content is organized in two ways at the same time, instead of only one hierarchy (like Home → Category → Subcategory), the matrix models allow users to navigate multiple directions rather than just up and down a hierarchy.

- This creates a cross-linked structure rather than a strict tree.

Common in e-commerce like Amazon.

✓ Flexible

✗ Can overwhelm users

Core Components of Information Architecture: *Organization Systems*

Example : AMAZON

- Amazon's website can be understood as a matrix organized in two dimensions:
- **Dimension 1: Product Categories**

Electronics ,Fashion, Home & Kitchen, Books, Beauty

- **Dimension 2: Attributes / Filters (Cross-Cutting Traits)**

Brand, Price Range, Customer Rating, Seller

Core Components of Information Architecture: *Organization Systems*

How the Matrix Structure Works

Example: Electronics

A customer can navigate: Category → Electronics

Then filter by: Brand → Samsung Price → Under \$500 Rating → 4★ & above

Seller → Amazon Official Store

The same filtering system works for:

Fashion → Brand → adidas → 4★ & above

Home & Kitchen → Seller → Verified Seller

Core Components of Information Architecture: *Organization Systems*

3. Matrix Structure:

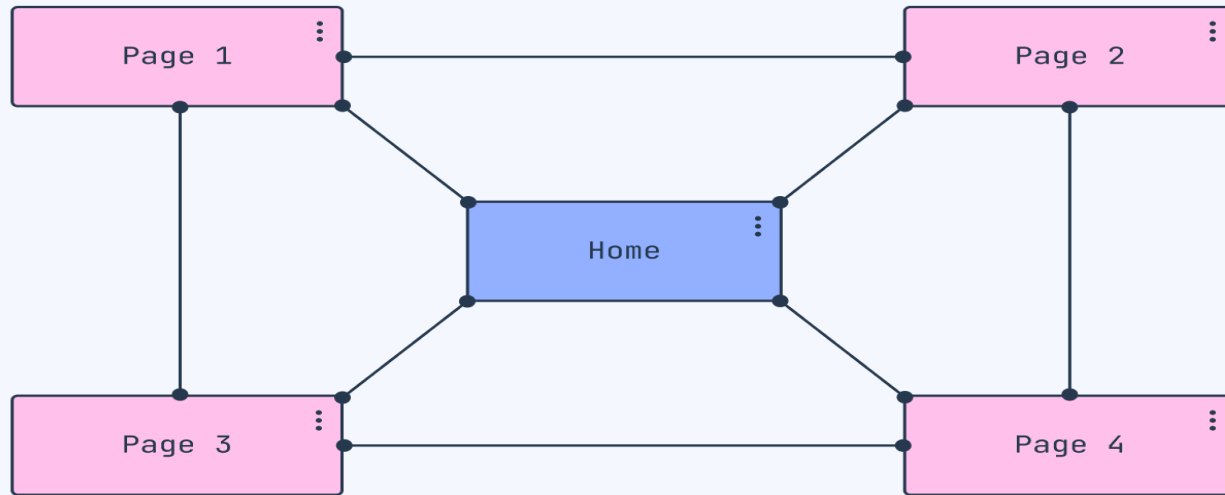
Simple Comparison

Hierarchical → one path (like a tree 🌳)

Matrix → many paths (like a web 🕸)

Core Components of Information Architecture: *Organization Systems*

Matrix structure



slickplan

Core Components of Information Architecture: *Organization Systems*

amazon.fr

Votre adresse de livraison:

Algérie

Livres

Rechercher Amazon.fr

FR

Bonjour, Identifiez-vous

Compte et listes

Toutes

Amazon Haul

Meilleures ventes

Ventes Flash

Dernières Nouveautés

Amazon Basics

Vendre sur Amazon

Livres

Guide de l'acheteur

Cartes cadeaux

Cuisine et maison

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Bonnes affaires

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Adolescents

Arts et photographie

Bandes dessinées

Beaux livres

Tous les livres

Catégories à l'honneur



Livres pour enfants



Romans et littérature



Livres en langues étrangères



Santé, Forme et Diététique



Scolaire et Parascolaire



Bandes dessinées



Manga



Sciences, Techniques et



Religions et Spiritualités



Mystère et suspense



Livres de cuisine, cuisine et



Histoire



Sports et loisirs



Calendriers et Agen

Core Components of Information Architecture: *Organization Systems*

4. Database-Driven Structure

Content dynamically generated from structured data.

Core Components of Information Architecture: *Organization Systems*

4. Database-Driven Structure

Example: A school website can dynamically display information like classes, students, teachers, events, and results using a database.

◆ Database Tables Example

Students: StudentID, Name, Class, Age, Email

Teachers: TeacherID, Name, Subject, Email

Classes: ClassID, ClassName, TeacherID, Schedule

Events: EventID, Title, Date, Description

Notices: NoticeID, Title, Content, Date

- **How It Works (Dynamic Pages)**

Home Page – Shows latest notices and upcoming events (from Notices & Events tables).

Students Page – Displays student profiles (from Students table).

Core Components of Information Architecture: *Organization Systems*

Methods of Categorizing Website Content:

- Categorizing website content is essential for organizing information logically.
- It helps users quickly find what they are looking for and improves the overall efficiency of a website.

2.1 Categorizing by Purpose: Content is grouped by what it is meant to do.

• Purpose	Example Pages
• Informational	About Us, Blog
• Transactional	Shop, Register

Core Components of Information Architecture: *Organization Systems*

- **2.2 Categorizing by Content Type:** Content is grouped by format.
 - Articles
 - Products
 - Services
 - Videos
 - Images
 - Downloads

Core Components of Information Architecture: *Organization Systems*

- **2.3 Categorizing by Audience** Content is grouped by who will use it.
- Example: School Website
 - Students
 - Teachers
 - Parents
 - Administrators

Core Components of Information Architecture: *Organization Systems*

- **2.4 Categorizing by Topic:** Content is grouped by subject area.
 - Example: Technology Website
 - Web Development
 - Artificial Intelligence
 - Cybersecurity

Core Components of Information Architecture: *Organization Systems*

- **2.5 Categorizing by Product Category:** Common in e-commerce websites.
- **Example:**
 - Electronics
 - Fashion
 - Books
 - Home & Kitchen

2. Core Components of Information Architecture: Labeling *Systems*

- Website labeling refers to the words and phrases used to represent content and navigation options on a website (such as menu items, buttons, and links).
- **Purpose**
- To communicate clearly what users will find.-->A label is a promise.

Poor labeling can confuse users and increase bounce rates.

2. Core Components of Information Architecture: Labeling *Systems*

- **1. Navigation Labels**

- Menu items: Home, About, Services, Contact

- **2. Headings**

- Structure within pages.

- **3. Index Terms**

- Search tags, keywords.

- **4. Iconic Labels**

- Icons (must be intuitive). Example:  = Cart

2. Core Components of Information Architecture: Labeling *Systems*

- **Principles of Good Website Labeling**

- 1) **Clarity**

- Labels must be clear and easy to understand.
 - ✓ Use simple words
 - ✓ Avoid technical jargon
 - **Good Example:** “Contact Us”
 - **Bad Example:** “Communication Interface Portal”

2. Core Components of Information Architecture: Labeling *Systems*

- **Principles of Good Website Labeling**

2) Consistency

- Use the same words throughout the website.
- **Example:**
- If you use “Shop,” don’t change it to “Store” elsewhere.
- Consistency builds familiarity and reduces confusion.

2. Core Components of Information Architecture: Labeling *Systems*

- Principles of Good Website Labeling

3) **Simplicity**

Keep labels short and direct.

- ✓ “Login” instead of “Access Your Account Here”
- ✓ “Blog” instead of “Read Our Latest Articles and Updates”

2. Core Components of Information Architecture: Labeling *Systems*

- Principles of Good Website Labeling

4) **User-Centered Language**

Use users' vocabulary, not internal company terms.

3. Core Components of Information Architecture: Navigation *Systems*

- **3.1 The Role of Navigation in IA**
- Navigation answers 3 critical user questions:
 - Where am I?
 - Where can I go?
 - How do I get back?
- Good navigation reduces:
 - Cognitive load
 - Bounce rate
 - User frustration

3. Core Components of Information Architecture: Navigation *Systems*

- **3.2 Types of Navigation Systems**

1. **Global Navigation:** Primary menu visible on every page.
2. **Local Navigation:** Sub-navigation within a section.
3. **Contextual Navigation:** Links within content.
 1. Example: Related articles, "Customers also bought"
4. **Utility Navigation:** Secondary tools: Login, Language, Help, Account
5. **Footer Navigation :** Secondary links, Legal, Privacy, Sitemap

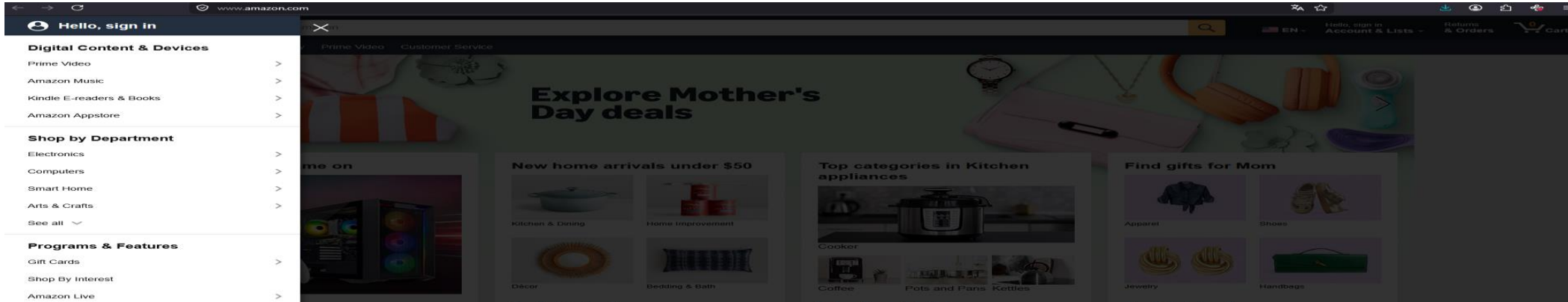
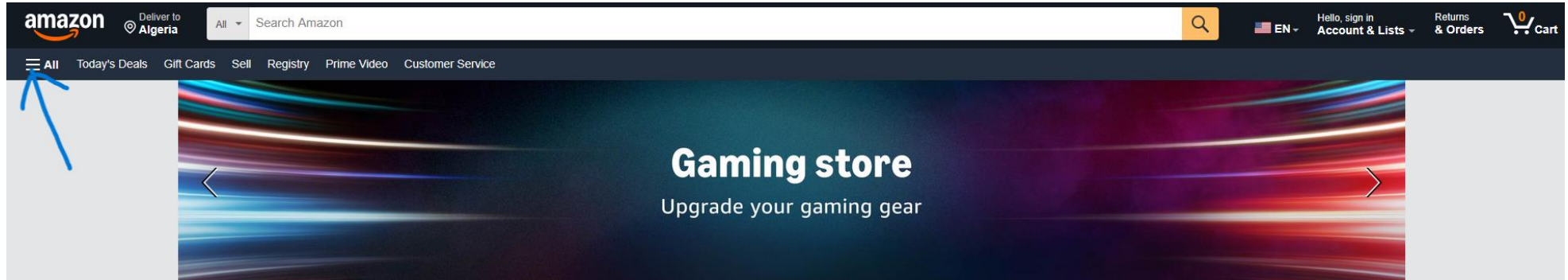
3. Core Components of Information Architecture: Navigation *Systems*

- **3.3 Navigation Patterns**

- **Header Navigation:** Best for: Marketing sites, Small-medium websites
- **Sidebar Navigation ;** Best for : SaaS apps, Dashboards Admin systems.
Example: Notion
- **Mega Menus:** Used by large e-commerce sites
 - Best for: Many categories, Large inventories
 - Example: Amazon
- **Hamburger Menus:** Best for: Mobile, Secondary navigation
Avoid hiding important content on desktop.

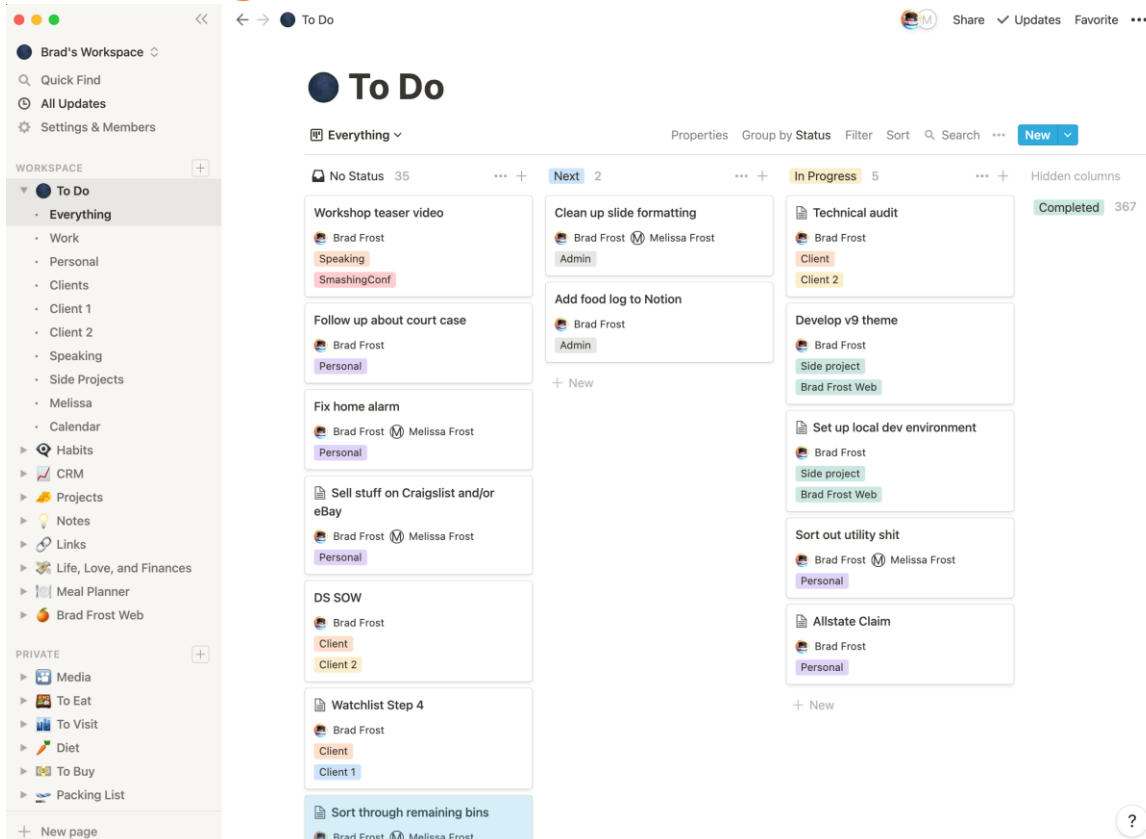
3. Core Components of Information Architecture: Navigation Systems

• 3.3 Navigation Patterns: Hamburger Menus:



3. Core Components of Information Architecture: Navigation *Systems*

- Sidebar Navigation



3. Core Components of Information Architecture: Navigation *Systems*

- **Mega menu**

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WOMEN

KIDS

SALE

3 STRIPE LIFE



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Best Sellers
Release Dates
Stories

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Pharrell
Karlie Kloss
Zoe Saldana
Prada
Craig Green
Bad Bunny
Human Made
YEEZY
Y-3
Stella McCartney
Consortium
Collaborations

OUR WORLD



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Sustainability
Futurecraft
She Breaks Barriers
adidas Legacy
adiClub
Made To Be Remade

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Baseball
Basketball
Football
Golf
Hockey
Lacrosse
Outdoor
Running
Soccer
Skateboarding
Snowboarding
Tennis
Workout
Volleyball
Weightlifting

ORIGINALS



Superstar
adilette
ZX
adicolor Clothing
NMD
Stan Smith
Samba
Gazelle
Oz
Forum
Originals Shoes
Originals Clothing

COLLECTIONS



adizero
Copa
4D
Nemeziz
Predator
Supernova
TERREX
Tiro
Ultraboost
X
Slides

3. Core Components of Information Architecture: Navigation *Systems*

- **3.4 Navigation Design Principles**
- ✓ Visibility: Always accessible.
- ✓ Feedback: Highlight active page.
- ✓ Orientation: Use breadcrumbs: Home > Category > Subcategory > Page
- ✓ Predictability: Users expect common patterns:
 - Logo → Homepage
 - Cart → Top right

3. Core Components of Information Architecture: Navigation *Systems*

3.5 Testing Your Navigation

3.5.1 Card Sorting

- Users group topics into categories

3.5.2 Tree Testing

- Test if users can find information
- Identify confusion points

3.5.3 Usability Testing

- Observe real users
- Measure time to find content

3. Core Components of Information Architecture: Navigation *Systems*

4. Search Systems

4.1 Why Search Exists

- Search supports users who:
 - Know exactly what they want
 - Don't want to browse
 - Are lost in navigation
 - Prefer speed over exploration

On large systems like Amazon or Wikipedia, search is critical.

3. Core Components of Information Architecture: Navigation *Systems*

4. Search Systems

4.2 Goals of a Search System: A good search system must:

- Return relevant results
- Handle user errors (typos, synonyms)
- Rank results intelligently
- Provide filtering options
- Support different user intents

3. Core Components of Information Architecture: Navigation *Systems*

4. Search Systems

4.3 Designing a Good Search Experience

4.3.1 **Visibility** Search should be:

- In header
- Easy to find
- Accessible on all pages (for content-heavy sites)

4.3.2 **Placeholder Text**

Bad: Search...

Better: each products, brands, or categories

3. Core Components of Information Architecture: Navigation *Systems*

4. Search Systems

4.3 Designing a Good Search Experience

4.3.3 Error Handling

- Handles typos
- Suggests corrections
- Shows related results
- Example: Did you mean: "iPhone"?

3. Core Components of Information Architecture: Navigation *Systems*

4. Search Systems

4.3 Designing a Good Search Experience

4.3.4 Zero Results Page

Never show just: No results found.

Instead:

- Suggest alternatives
- Show popular items
- Provide filters reset
- Offer support link

3. Core Components of Information Architecture: Navigation *Systems*

4. Search Systems

4.3 Designing a Good Search Experience

4.3.5 Search Results Page (SERP Design): Should include:

- Clear title
- Number of results
- Sorting options
- Filters (facets)
- Highlighted keywords
- Pagination or infinite scroll