

# Visual Design and Fluid Navigation

User Experience Design

Alberto Monge Roffarello

Academic Year 2024/2025

# Hall of Fame or Shame?



# Visual Design

Aesthetics for helping users in understanding and navigating the UI

# Visual Design

- **Guiding:** conveying structure, relative importance, relationships
- **Pacing:** drawing people into your app, orienting them, and showing where to go, providing hooks to dive deeper
- **Messaging:** expressing meaning and style, breathing life into your content
- Both at the conscious and sub-conscious levels
- And also...
  - Making everything look aesthetically beautiful  
(but this is not the goal)

# Visual Design vs. Art and Artistic Skills

- A.k.a. «Help, I'm not an artist!»
- Artistic skills help a bit but are neither necessary nor sufficient
- Art does not need to be practical; design does
- Real design skills take years to master
- Widely-accepted heuristics are a good and easy start



# The Basics of Visual Design

Basic visual design involves text, layout, and colors. First let's start with text. Gracefully using whitespace helps separate out logical chunks of content. Next, font size and style differences convey hierarchy. Finally, alignment is crucial for helping readers scan quickly.

# Whitespace

Basic visual design involves text, layout, and colors. First let's start with text.

Gracefully using whitespace helps separate out logical chunks of content.

Next, font size and style differences convey hierarchy.

Finally, alignment is crucial for helping readers scan quickly.

# Hierarchy

Basic visual design involves ...

## **T**ext

Gracefully using whitespace helps separate out logical chunks of content.

Next, font size and style differences convey hierarchy.

Finally, alignment is crucial for helping readers scan quickly.

## **L**ayout

## **C**olors

# Alignment

BASIC VISUAL DESIGN

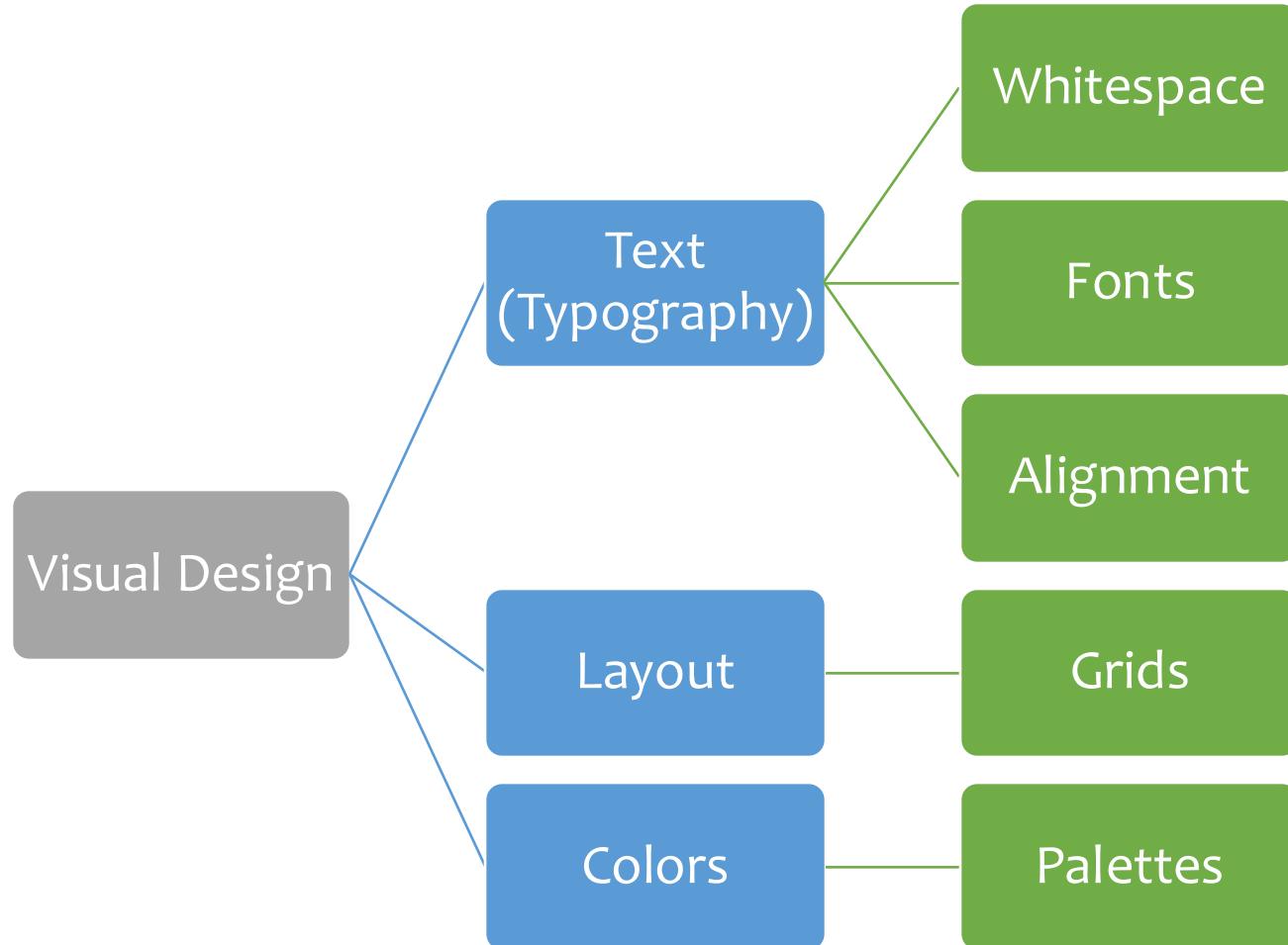
## Text

- **Whitespace**: helps separate out logical chunks of content
- **Font**: size and style differences convey hierarchy
- **Alignment**: crucial for helping readers scan quickly

## Layout

## Colors

# Key Ingredients



# Recognizable Page Structure



# Recognizable Page Structure

CNN World US Politics Business Health Entertainment Style Travel Sports Videos Edition ▾

NEW PODCAST: Tug of war | COVID-19: Vaccination tracker | TRENDING: Elon Musk | Oldest surviving Miss America dies | SpaceX toilet problem | Queen |

## Brazil has big green plans. But its track record is dismal



The Brazilian government is bringing ambitious promises to the UN climate summit, but can it be believed?

Queen Elizabeth II tells world leaders at COP26 there's 'room for hope' on climate

Biden apologizes to world leaders for Trump's climate actions

How the 'Venice of Africa' is impacted by climate change

**DEVELOPING STORY**

### 22-story building collapses in Lagos, Nigeria



Manchin issues warning to Democrats on Biden's economic package

Analysis: Tim Scott confirms he's on the Trump 2024 train

**ANALYSIS**

### 'Let's go Brandon,' explained

Two conservative justices seem open to arguments from abortion providers

Barclays CEO quits after investigation into links with Jeffrey Epstein

Missile attack on mosque and religious school kills and injures 29 Yemeni civilians

At least 12 people killed and 52 injured in Halloween weekend mass shootings in US

Reporter reveals what Lindsey Graham said during January 6 riot

Analysis: Trump escalates Jan. 6 cover-up

Tigrayan forces accused of killing 100 youths

**News and buzz**

### Elon Musk offers to sell Tesla stock 'right now' if UN can show how \$6 billion would



**Featured**

**Spotlight**



Man scheduled to be executed for murder he says he didn't commit seeks clemency

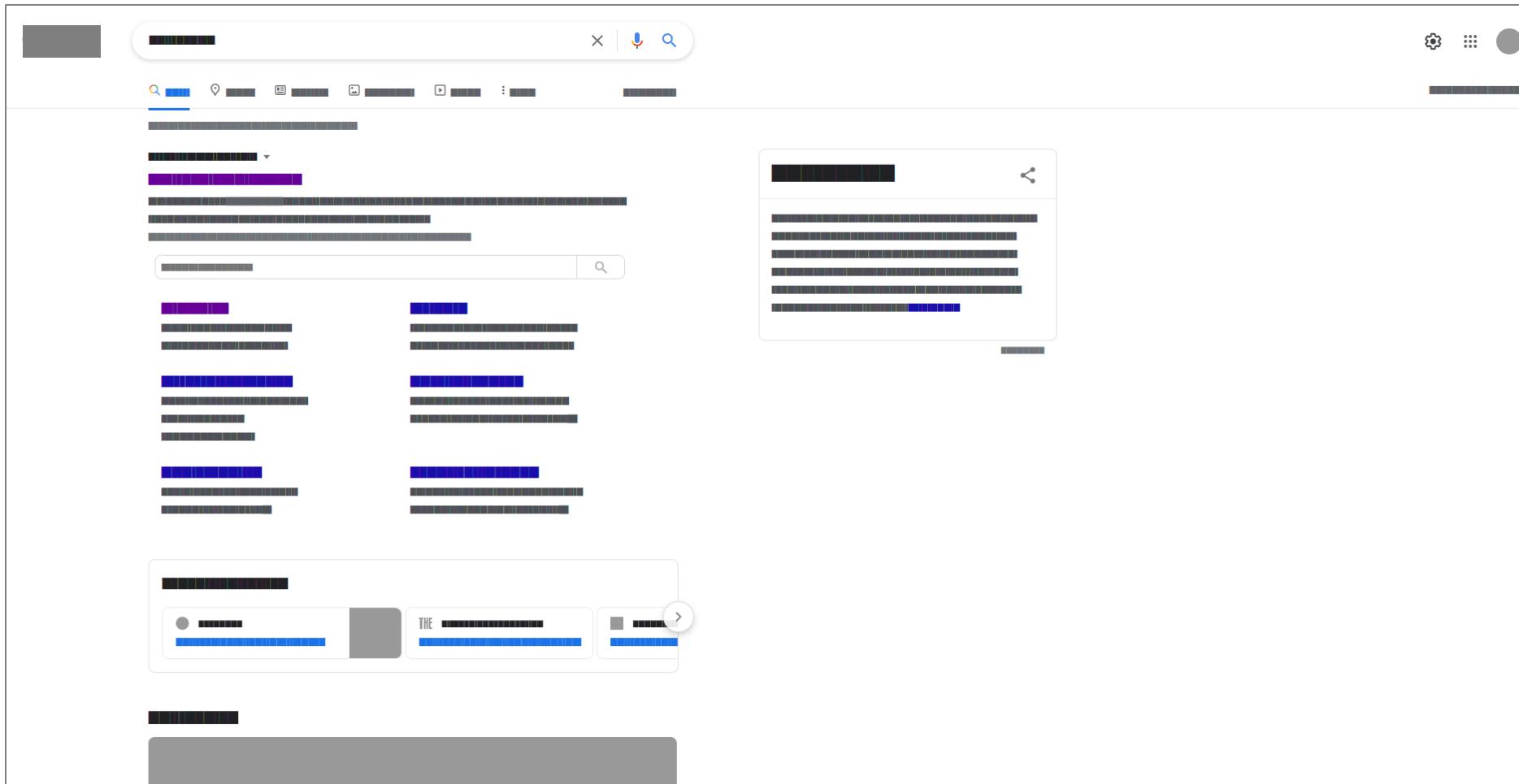


Could Covid-19 vaccines impair a child's future fertility? Officials say no.

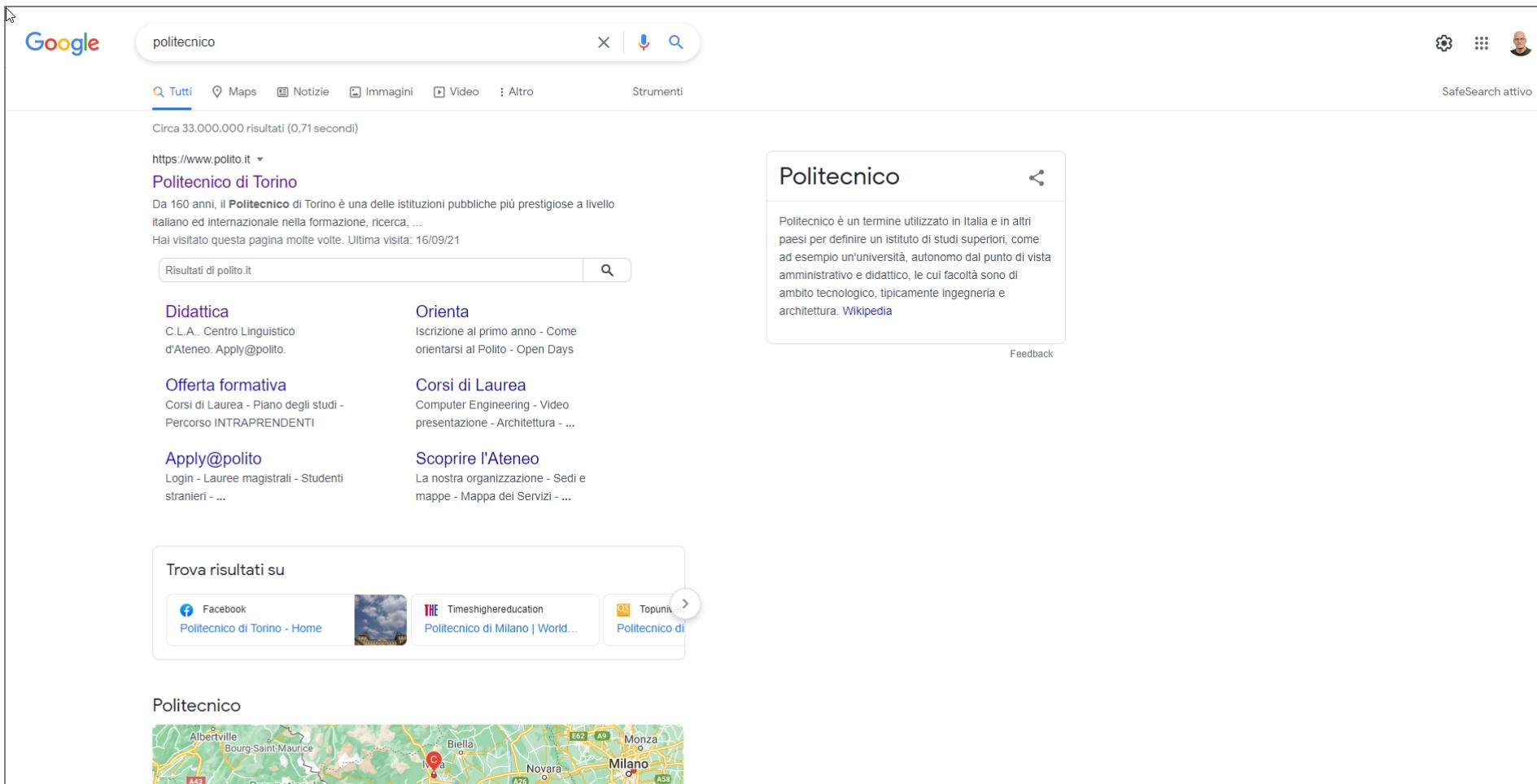


Kal Penn, 'Harold and Kumar' and 'House' star, comes out as gay

# Recognizable Page Structure



# Recognizable Page Structure



# Recognizable Page Structure



# Recognizable Page Structure

The screenshot shows the homepage of Stack Overflow. At the top, there is a navigation bar with links for "About", "Products", "For Teams", a search bar, and buttons for "Log in" and "Sign up". The main content area is titled "All Questions" and displays 21,855,928 questions. The questions are listed in a grid format, each with a title, a brief description, the number of votes and answers, tags, and the user who asked it. To the right of the main content, there are several sidebar sections: "The Overflow Blog" (with posts like "Podcast 388: Software for your second brain" and "Why SOLID principles are still the foundation for modern software architecture"), "Featured on Meta" (with posts like "Now live: A fully responsive profile" and "Please welcome Valued Associates #999 - Bella Blue & #1001 - Salmon of Wisdom"), "Collectives" (listing groups like "Go Language" with 13k members, "Google Cloud" with 11k members, and "GitLab" with 3k members), and "Related Tags" (listing tags like "javascript", "python", and "java"). On the left side, there is a sidebar with links for "Home", "PUBLIC Questions", "Tags", "Users", "COLLECTIVES Explore Collectives", "FIND A JOB Jobs", "Companies", and "TEAMS". The "TEAMS" section includes a "Stack Overflow for Teams" introduction, a "Create a free Team" button, and a "What is Teams?" link.

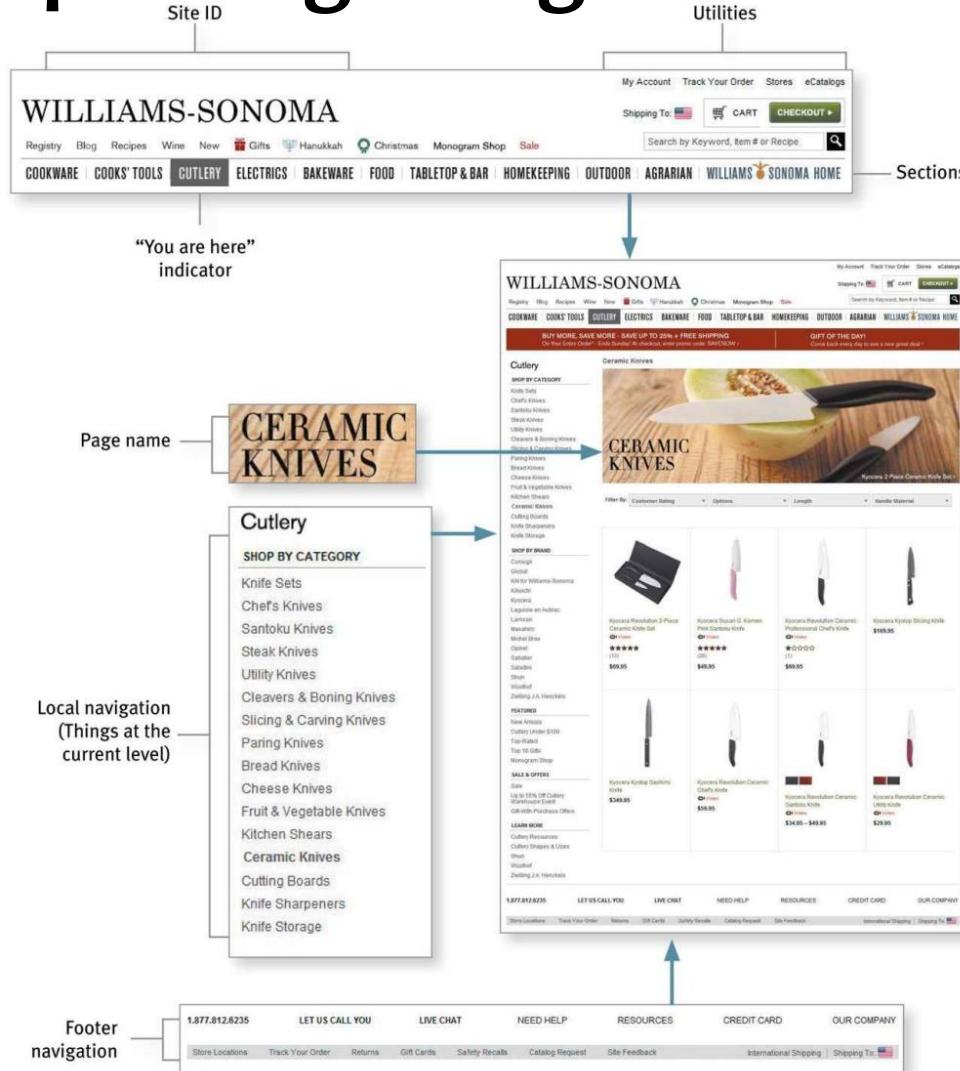
# Recognizable Page Structure



# Recognizable Page Structure

The screenshot shows the Tripadvisor website interface for searching hotels in New York City. At the top, there's a navigation bar with links for "New York City", "Hotel", "Cose da fare", "Ristoranti", "Voli", "Case vacanza", "Pacchetti vacanza", "Crociere", "Autonoleggio", and "Avvisi". Below the navigation is a map of New York City with a button labeled "Guarda la mappa". The main title "Hotel New York City e alloggi" is displayed above a search form for "Arrivo" (Arrival) and "Partenza" (Departure), and a guest count of "Ospiti" (Guests) "1 camera, 2 adulti, 0 bambini". A sidebar on the left contains filters for "COVID-19" (checkbox for "Strutture che adottano misure di sicurezza"), "Offerte" (checkboxes for "Cancellazione gratuita", "Prenota ora, paga quando soggiorni", and "Strutture con Offerte Speciali"), "Prezzo" (a range slider from "0 € - + 623 €" and a dropdown for "Prezzo + tasse e spese"), and "Molto richiesti" (checkboxes for "5 stelle", "Colazione inclusa", "4 stelle", and "3 stelle"). The main content area shows a list of 911 structures in New York City, ordered by "Qualità-prezzo". The first result is a sponsored listing for "Fairfield Inn & Suites New York Midtown Manhattan/Penn Station", featuring a large image of the hotel building, its price of "161 €", and a "Vedi l'offerta" button. To the right of the listing are details like "Info sull'hotel", "Visita il sito dell'hotel", "00 1212 563-0900", "Offerta Speciale", and icons for "Connessione Wi-Fi gratuita", "Bar/Lounge", "Centro fitness", and "Misure di sicurezza adottate".

# Conventions Help Recognizing Structure



# ‘Gestalt’ principles

Hints from the psychology of Shapes and of Representation

# Gestalt principles

- Laws from 1920s' psychology: how humans typically see objects by grouping similar elements, recognizing patterns and simplifying complex images
- Designers use these to engage users via powerful -yet natural- “tricks” of perspective and best practice design standards
- “*The whole is other than the sum of the parts*” - Kurt Koffka



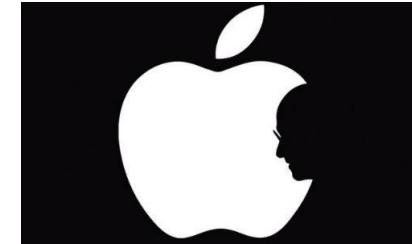
<https://www.interaction-design.org/literature/topics/gestalt-principles>

<https://www.usertesting.com/blog/gestalt-principles/>

# Some Gestalt Principles

- **Figure/Ground:** Disliking uncertainty, we look for solid, stable items. Foreground catches the eye first
- **Closure:** Preferring complete shapes, we automatically fill in gaps to perceive a complete image; we see the whole first
- **Common Region:** We group elements that are in the same closed region
- **Element Connectedness:** We group elements linked by other elements
- **Continuation:** We follow and “flow with” lines
- **Proximity (Emergence):** We group closer-together elements, separating them from those farther apart.
- **Good Form:** We differentiate elements that are similar in color, form, pattern, etc. and cluster them together
- **Meaningfulness (Familiarity):** We group elements if they form a meaningful or personally relevant image.
- **Prägnanz:** We perceive complex images as simple ones.
- **Convexity:** We perceive convex shapes ahead of concave ones
- **Regularity:** Sorting items, we tend to group some into larger shapes, and connect elements that form a pattern.
- **Similarity (Invariance):** We seek differences and similarities in an image and link similar elements.
- **Symmetry:** We seek balance and order in designs, struggling to do so if they aren’t readily apparent.
- **Common Fate:** We group elements that move in the same direction
- **Synchrony:** We group static visual elements that appear at the same time.

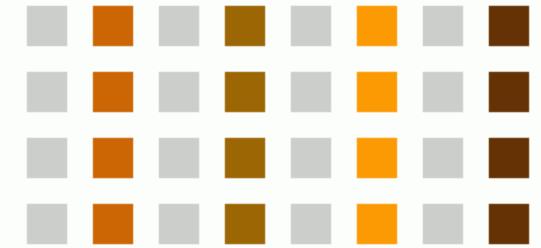
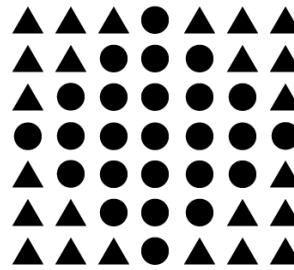
# Examples: Figure-ground



The Basecamp 3 landing page features a central cartoon illustration of a character overwhelmed by multiple communication channels, including email, phone calls, and messages. The character is surrounded by speech bubbles containing text like "DID WE GET THAT DRAFT YET?", "WAIT, WHO MADE THAT DECISION?", "WHERE DO I PUT THAT?", "WHEN IS THIS DUE?", "WHO SENT THIS TO THE CLIENT?", and "NO ONE TOLD ME THAT! THIS IS EXHAUSTING!". Above the illustration, a banner reads "Working with other people? Struggling to keep everyone on the same page?". To the right of the illustration is a sign-up form with a button labeled "Sign up now for free below". Below the form, a message states "Just last week, 10,772 companies got started with Basecamp 3!". The form includes fields for "Your Name" (Jule Applesseed), "Your Email" (jule@widgetco.com), and "Company/Organization" (Widget, Co.).

The AngelList homepage has a dark background featuring a stylized image of Earth from space. At the top, there is a navigation bar with links for SYNDICATES, STARTUPS, FUNDS, STARTUP JOBS, RECRUITING, and MORE. On the right side, there is a search bar and links for JOIN and LOG IN. A prominent call-to-action button says "Find a Startup Job". To the right of the main content area, there is a sidebar with links for "Post a Job", "Raise Money Online", and "Invest in Startups".

# Examples: Similarity



The screenshot shows the GitHub sign-up interface. At the top, there are links for 'Explore', 'Features', 'Enterprise', 'Pricing', 'Sign up' (in green), and 'Sign in'. Below this, there's a large input field for 'Pick a username', followed by fields for 'Your email' and 'Create a password'. A note below the password field specifies character limits. A prominent green 'Sign up for GitHub' button is centered. Below the form, a small note about terms and privacy policy is visible. At the bottom, a blue banner asks 'Want to use GitHub on your servers?'.

The screenshot shows the homepage of the Italian newspaper LA STAMPA. The header includes links for 'GNN', 'NEWSLETTER', social media icons, and 'ABBONATI / ACCEDI'. The main title 'LA STAMPA' is displayed prominently. Below the header, there are several news articles with images and titles. One article features a photo of an ArcelorMittal sign. Another article shows a man speaking at a podium. There are also images of industrial facilities and a person in a snowy environment. The layout is clean with a white background and clear typography.

# Examples: Proximity



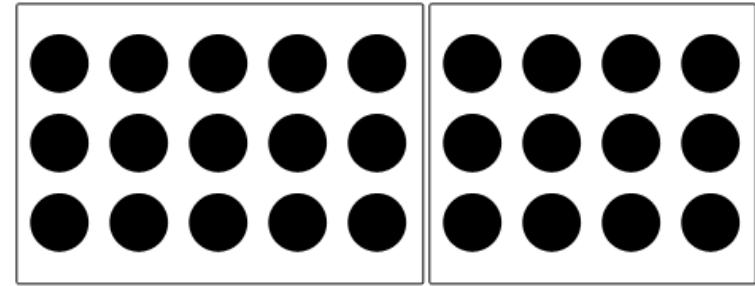
The screenshot shows the Walmart homepage with a navigation bar at the top. Below it, a banner says "Save big in every department". A grid of products includes: Electronics (iPad), Home (coffee maker), Exercise & Fitness (woman on treadmill), Health (vitamin bottle), Clothing & Jewelry (pink top), Furniture (blue armchair); Cold Weather Prep (person in snow), Tax Preparation (TurboTax logo), Auto & Tires (tire), Office Supplies (black bin), Home Improvement (drill), Outdoor Sports (tent); and a Paw Patrol character, a baby in a bouncer, a baby's face, a blue square, Fritos chips, and Call of Duty: Black Ops 3 game cover.

The screenshot shows the VICE news homepage. The navigation bar includes links for WATCH, SECTIONS, PHOTOS, MAGAZINE, TOPICS, CITY GUIDES, ELECTION 2016, OPINION, and MORE. Below the navigation, there are several news articles: "Medical Marijuana Users in Canada Can Legally Grow Their Own Weed Now" (Feb 24, 2016) by Marisa Krichman; "The Women Who Love Ted Cruz" (Feb 24, 2016) by Josh Antweiler; "How Donald Trump Won Nevada's Cliven Bundy Vote" (Feb 24, 2016) by Grace Myler; and other news items like "STUFF" and "MOTHERBOARD".



<https://www.usertesting.com/blog/gestalt-principles/>

# Examples: Common Region



Pinterest search results for 'architecture' showing various architectural projects and designs.

Houzz article titled "11 Things You Didn't Think You Could Fit Into a Small Bedroom" by Parisa. The article discusses how clever designers fit storage, murals, and chandeliers into small bedrooms. It includes a photo of a small bedroom with a curved wall and a caption: "Clever designers have found ways to fit storage, murals and even chandeliers into these tight sleeping spaces".

WWW.HOUZZ.COM

Like 157 | Comment | Share

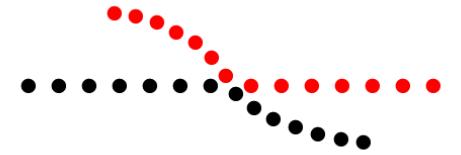
Top Comments

33 shares

Frankie Sez Really great ideas for the 'minimalist' in some of us...  
Like · Reply · 2 · Yesterday at 5:42am

Country Mountain Homes Space for books is a must!  
Like · Reply · Yesterday at 10:07am

View 2 more comments



# Examples: Continuity

Customers Who Bought This Item Also Bought

The screenshot shows a row of five book covers with their titles, authors, and prices. The books are: 'CROSSING THE CHASM' by Geoffrey A. Moore (\$12.35 Prime), 'THE LEAN STARTUP' by Eric Ries (\$10.06 Prime), 'The Innovator's Dilemma' by Eric Ries (\$16.66 Prime), 'THE INNOVATOR'S SOLUTION' by Clayton M. Christensen (\$10.06 Prime), and 'How Will You Measure Your Life?' by Clayton M. Christensen (\$18.33 Prime). Each book has a star rating and the number of reviews.

Book Title	Author	Price	Rating	Reviews
CROSSING THE CHASM	Geoffrey A. Moore	\$12.35	★★★★★	72
THE LEAN STARTUP	Eric Ries	\$10.06	★★★★★	1,062
The Innovator's Dilemma	Eric Ries	\$16.66	★★★★★	209
THE INNOVATOR'S SOLUTION	Clayton M. Christensen	\$10.06	★★★★★	22
How Will You Measure Your Life?	Clayton M. Christensen	\$18.33	★★★★★	583

Page 1 of 20



## Step 1

Choose your meals, drinks and treats from our daily rotating menu.



## Step 2

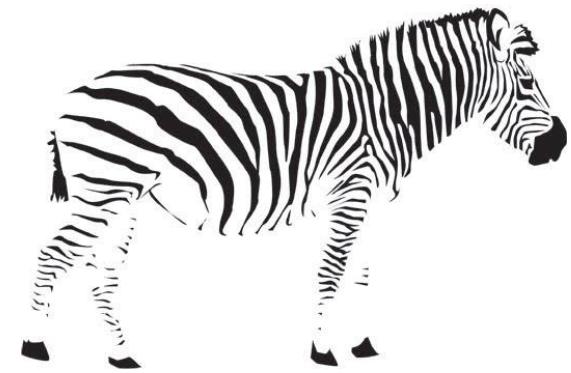
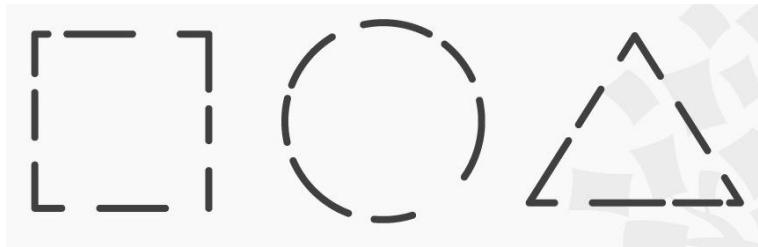
Our friendly servers organize your food for delivery - hot and ready to eat!



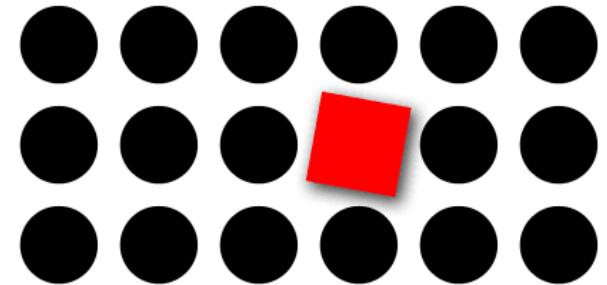
## Step 3

Your meal arrives in around 20 minutes - like a home-cooked meal without the effort!

## Examples: Closure



# Examples: Focal Point



The Twilio homepage features a dark background image of a busy street scene. At the top, the Twilio logo is on the left, followed by navigation links: PRODUCTS & PRICING, USE CASES, API & DOCS, NOT A DEVELOPER?, SIGN UP, and LOG IN. Below the navigation, a large white text area reads "BUILD APPS THAT COMMUNICATE WITH EVERYONE IN THE WORLD". Underneath this, smaller text says "A Messaging, Voice, Video and Authentication API for every application". At the bottom, there are two buttons: "See Use Cases" and "Get a free API key".

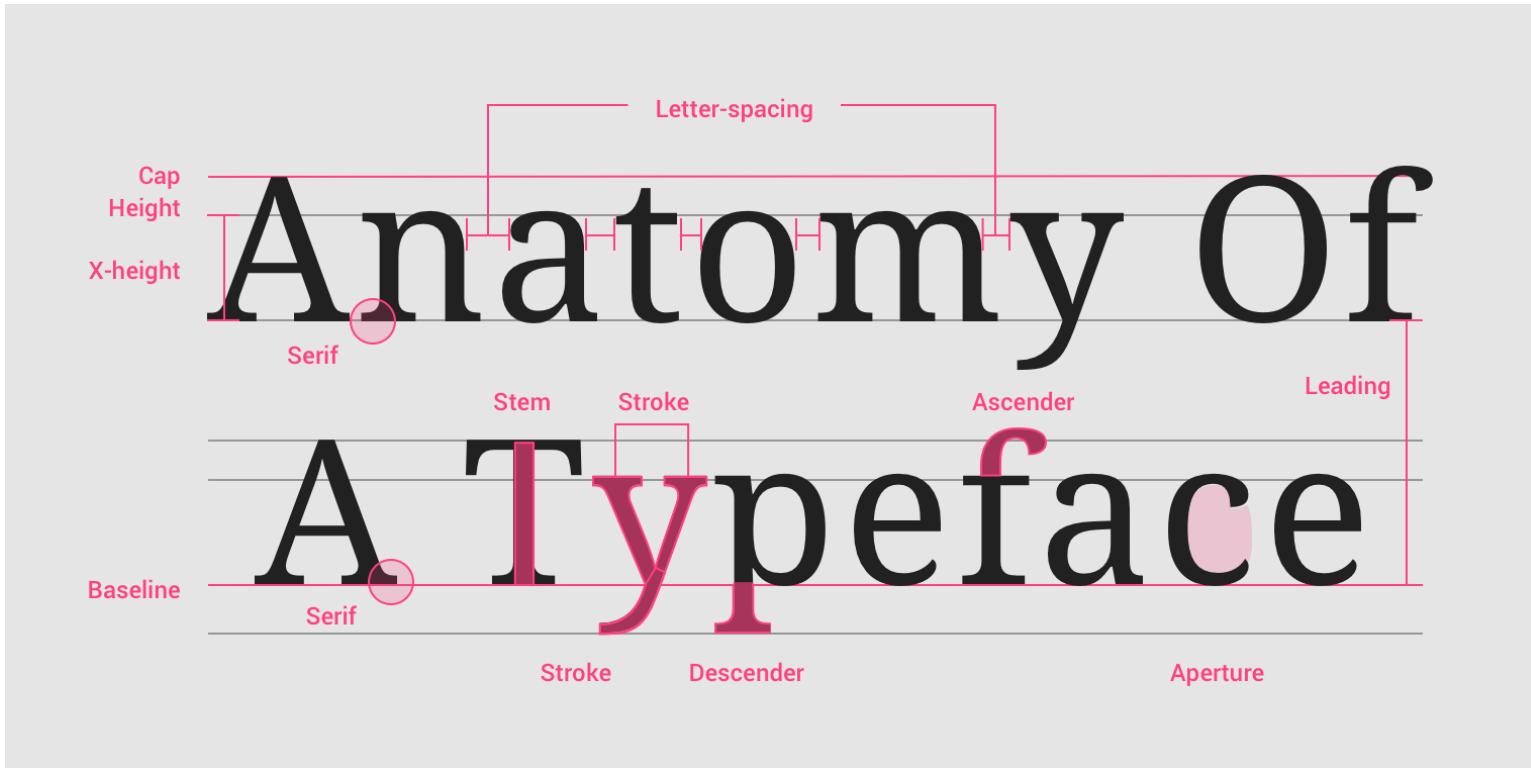
The Instacart homepage features a background image of a person holding a grocery bag filled with items like a sandwich, chips, and vegetables. Overlaid on this is a white search form with the Instacart logo at the top. The form contains the text "Groceries delivered in 1 hour" and "Enter your zip code to see your local stores". It has two buttons: "Enter Zip Code" and "Find Stores >". Below the form, there's a link "Already have an account? Log in" and a promotional message "FREE delivery on your first order\*".

# Typography

Property of text

# Characteristics of Text

- Point Size
- Leading
- Cap Height, x-height
- Ascenders, Descenders
- Weight
- Serifs



<https://material.io/design/typography/understanding-typography.html>

# Example: Material Design Type Scale

A combination of 13 styles that are supported by the type system

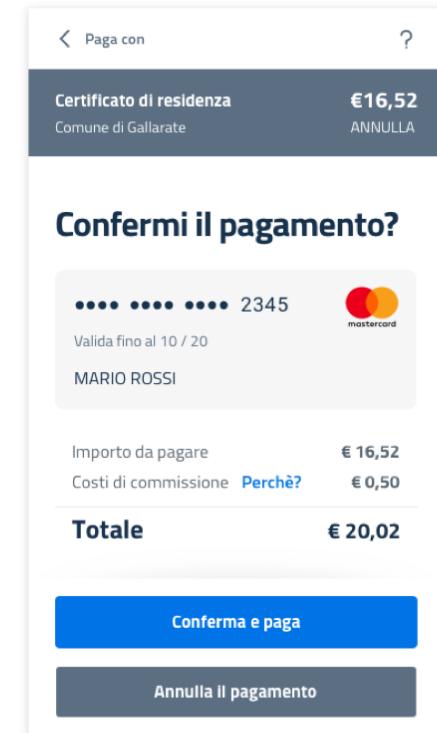
Reusable categories of text, each with an intended application and meaning

Scale Category	Typeface	Font	Size	Case	Letter spacing
H1	Roboto	Light	96	Sentence	-1.5
H2	Roboto	Light	60	Sentence	-0.5
H3	Roboto	Regular	48	Sentence	0
H4	Roboto	Regular	34	Sentence	0.25
H5	Roboto	Regular	24	Sentence	0
H6	Roboto	Medium	20	Sentence	0.15
Subtitle 1	Roboto	Regular	16	Sentence	0.15
Subtitle 2	Roboto	Medium	14	Sentence	0.1
Body 1	Roboto	Regular	16	Sentence	0.5
Body 2	Roboto	Regular	14	Sentence	0.25
BUTTON	Roboto	Medium	14	All caps	1.25
Caption	Roboto	Regular	12	Sentence	0.4
OVERLINE	Roboto	Regular	10	All caps	1.5

<https://material.io/design/typography/the-type-system.html#type-scale>

# Text

- Font size, color and spacing define a hierarchy of visibility and attention
- The visual hierarchy should match the relative importance of the information content



<https://docs.italia.it/italia/designers-italia/design-linee-guida-docs/it/stabile/doc/user-interface/il-disegno-di-un-interfaccia-e-lo-ui-kit.html>

# Text and Layout Convey Meaning

Building Type:	Detached House
Year Of Construction:	2012
Listing Price:	\$750,000
Address:	742 Evergreen Terrace
Bedrooms:	3
Bathrooms:	2
Real Estate Agent:	Tiffany Heffner
Contact:	(555) 555-4321

DETACHED HOUSE - 5Y OLD  
\$750,000  
742 Evergreen Terrace

 3 Bedrooms     2 Bathrooms

REALTOR  
 Tiffany Heffner  
(555) 555-4321

Present data in a more useful way  
Emphasize the most important content  
Combine labels and values into human-readable phrases

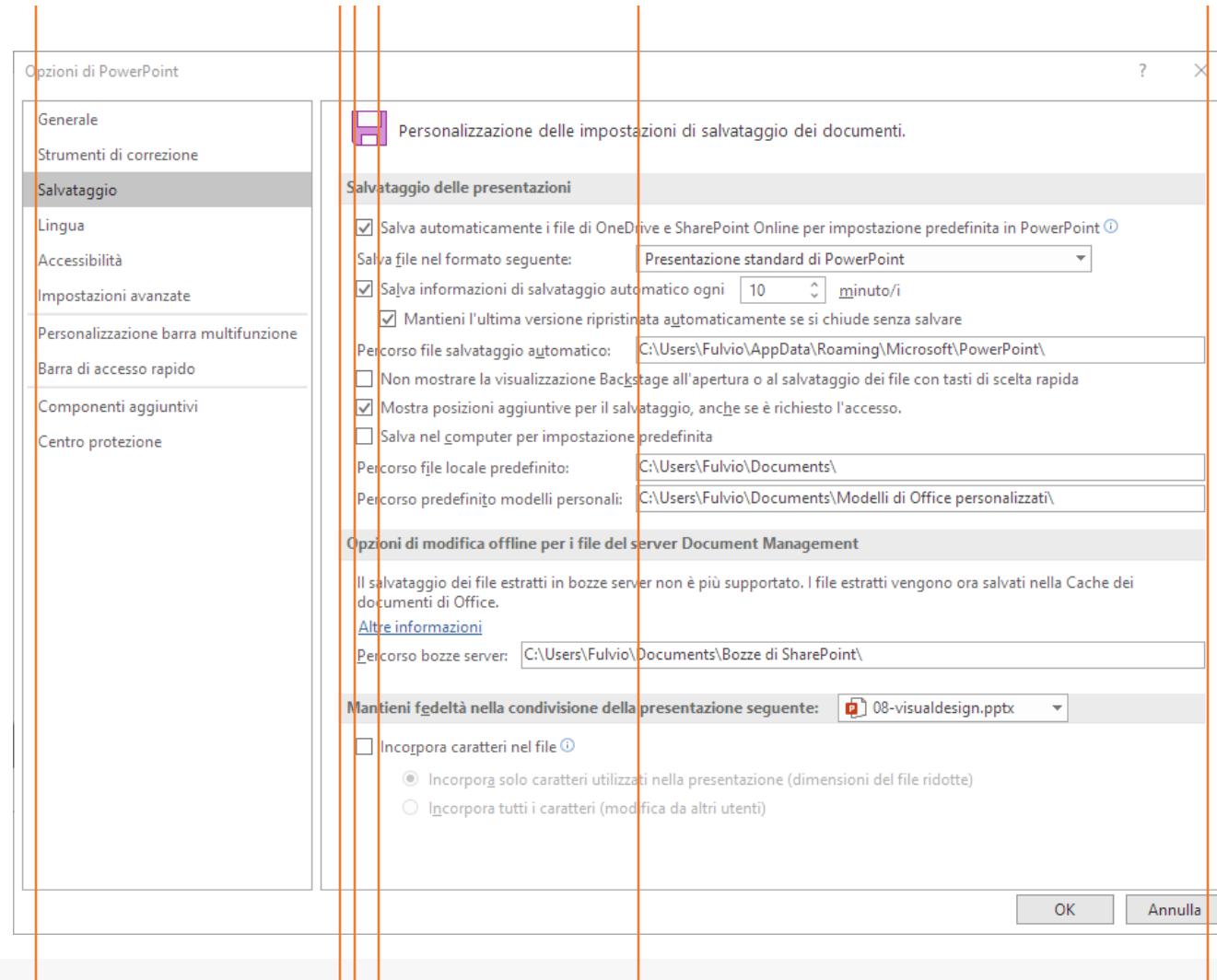
# Grids and Alignment

Exploiting grouping and alignment to convey content, at different levels

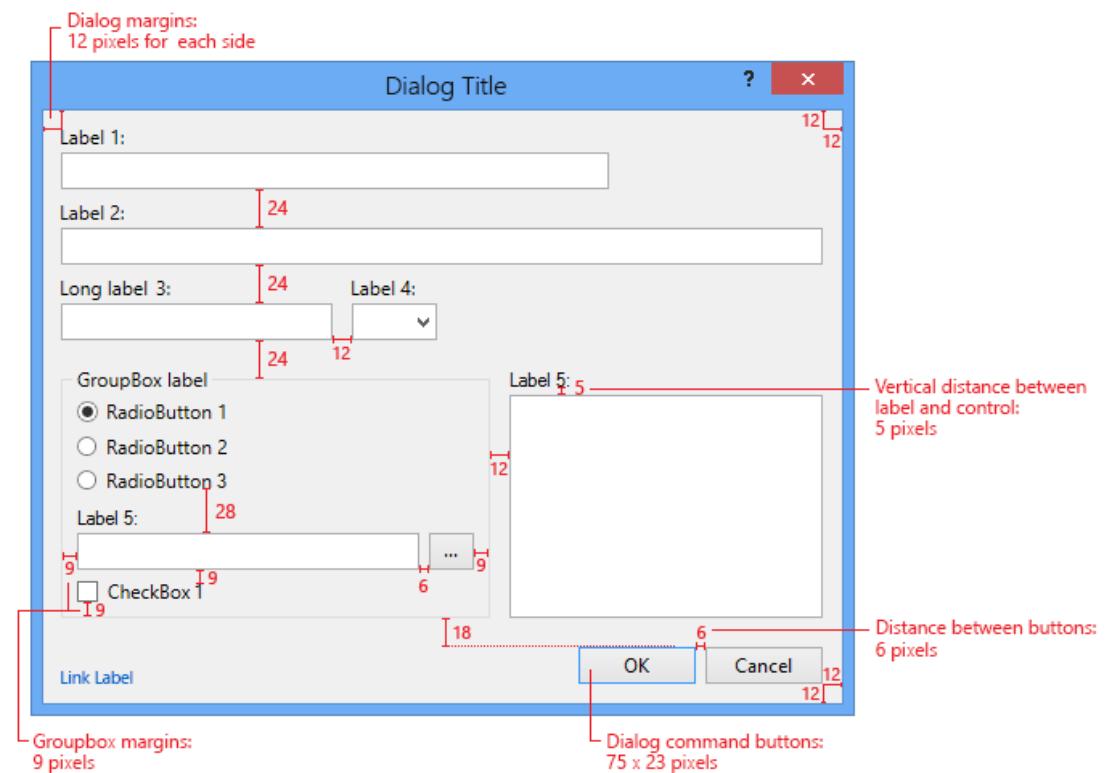
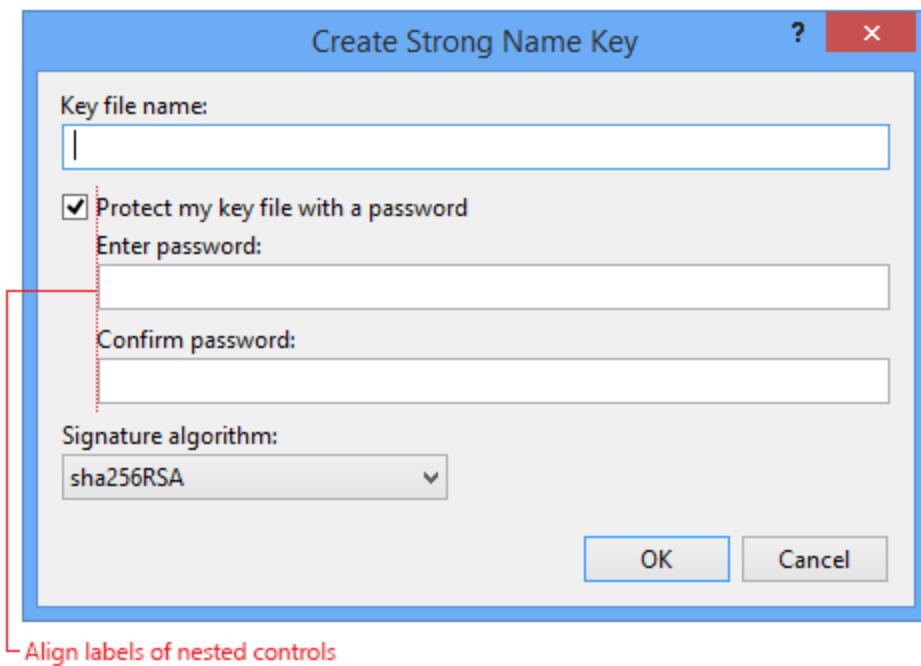
# Alignment

- Invisible lines that run through the interface and “attract” the left- or right-edge of a widget control
  - Vertical
  - Horizontal

# Example



# Examples



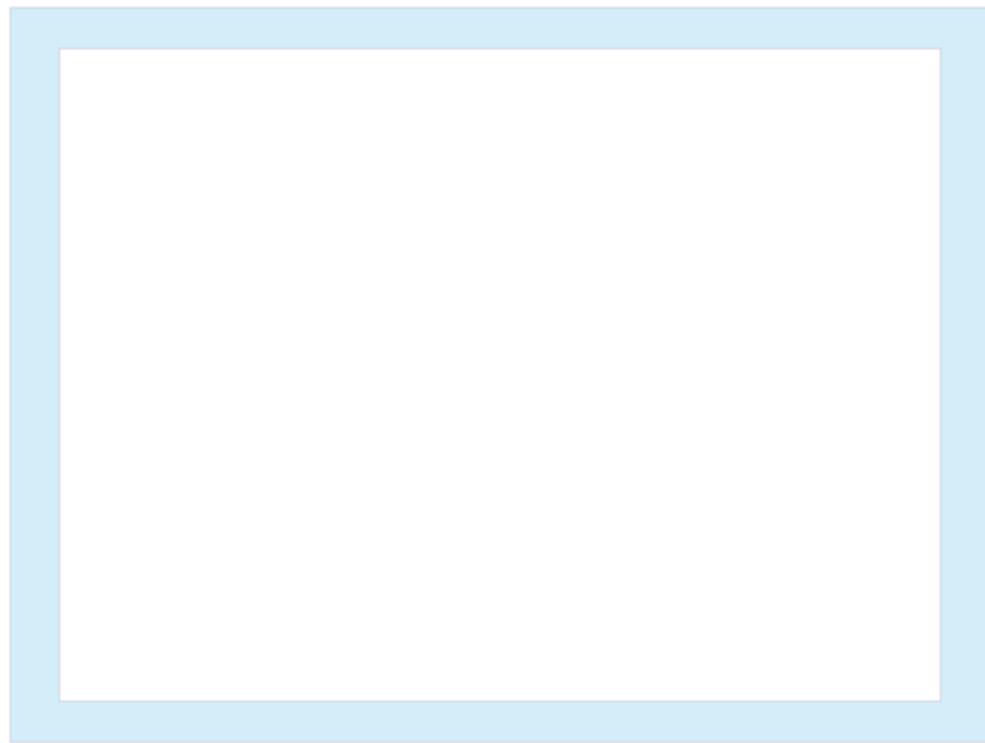
<https://docs.microsoft.com/en-us/visualstudio/extensibility/ux-guidelines/layout-for-visual-studio?view=vs-2019>

# Grid Layout Ingredients

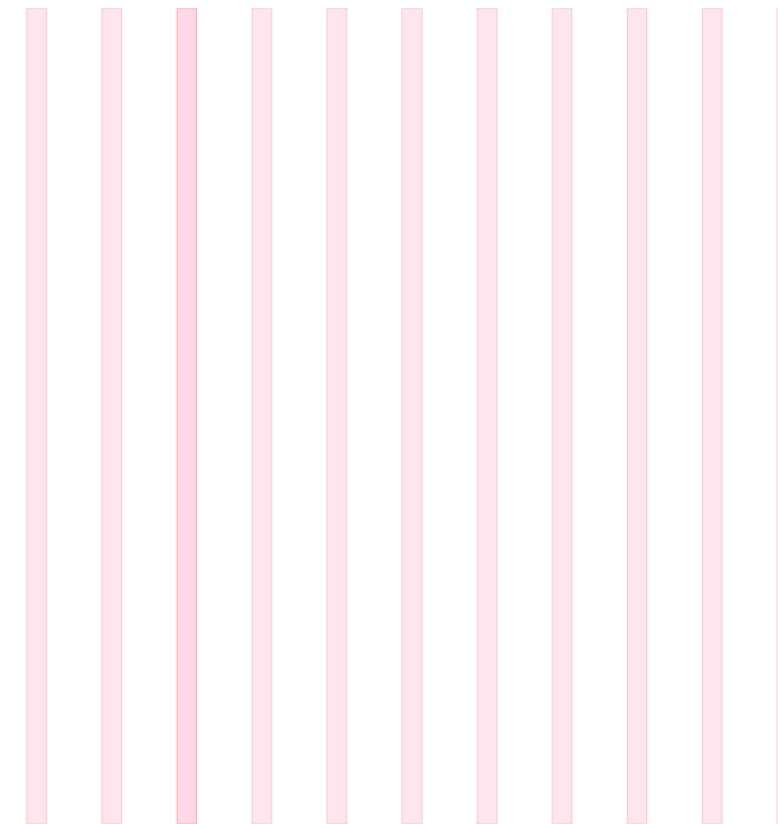
- **Guides:** The edge which you choose to align content with
- **Column:** A vertical division of content
- **Row:** A horizontal division of content
- **Margins:** The area surrounding your content
- **Gutters:** The margins between columns
- **Hang-line:** A horizontal guide to align content to hang off of
- **Baseline:** The horizontal guide for an element to sit on top of
- **Rhythm:** Proportion systems that can help define the sizing frequency and spacing of each of the above elements.

# Grid Layout Ingredients

## Margins

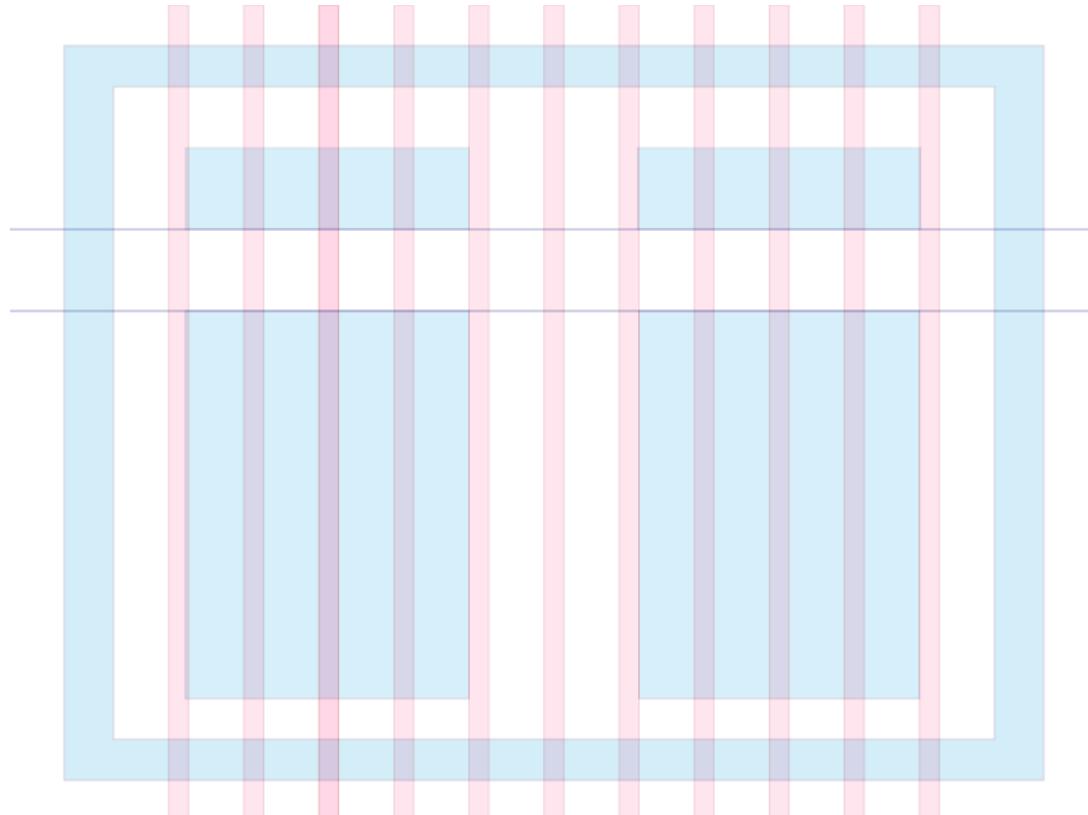


## Columns & Gutters



# Grid Layout Ingredients

## Hanglines and Baselines

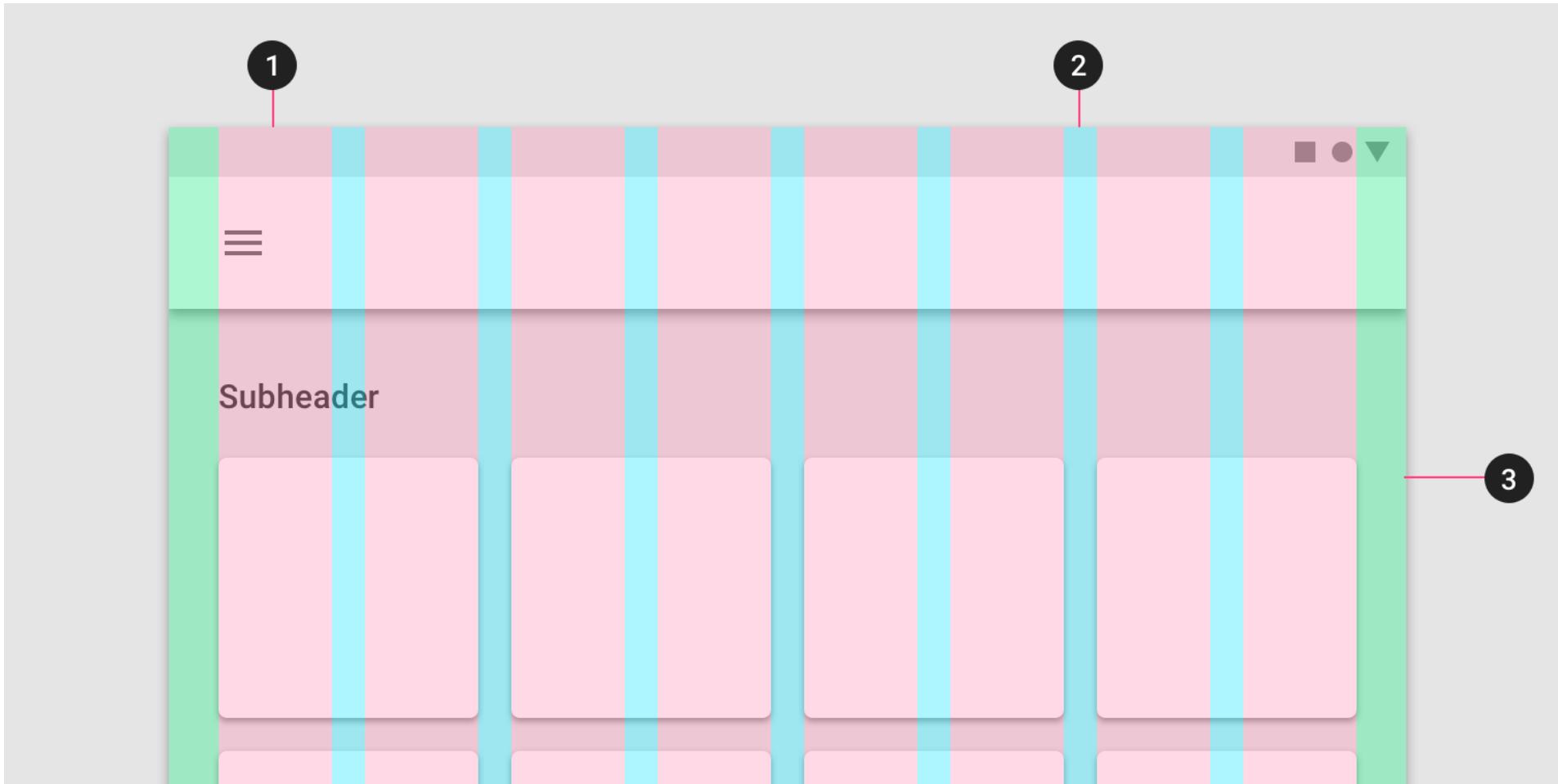


## Baseline Grids



# Example Grid-based layout

1. Columns
2. Gutters
3. Margins



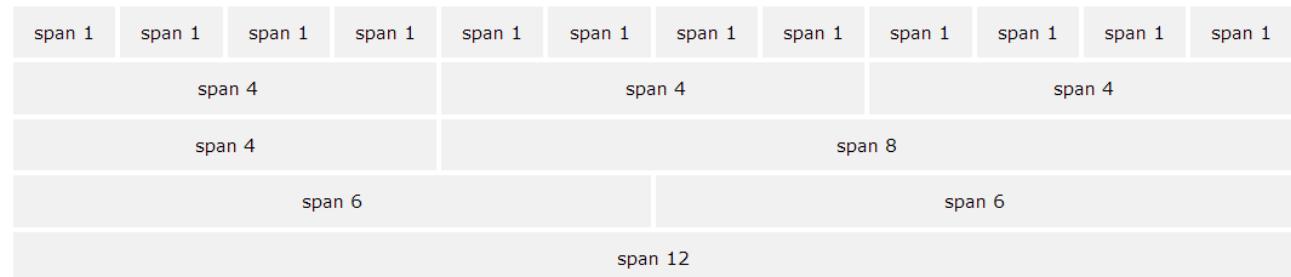
# Example: Bootstrap grid

Always 12 columns in total

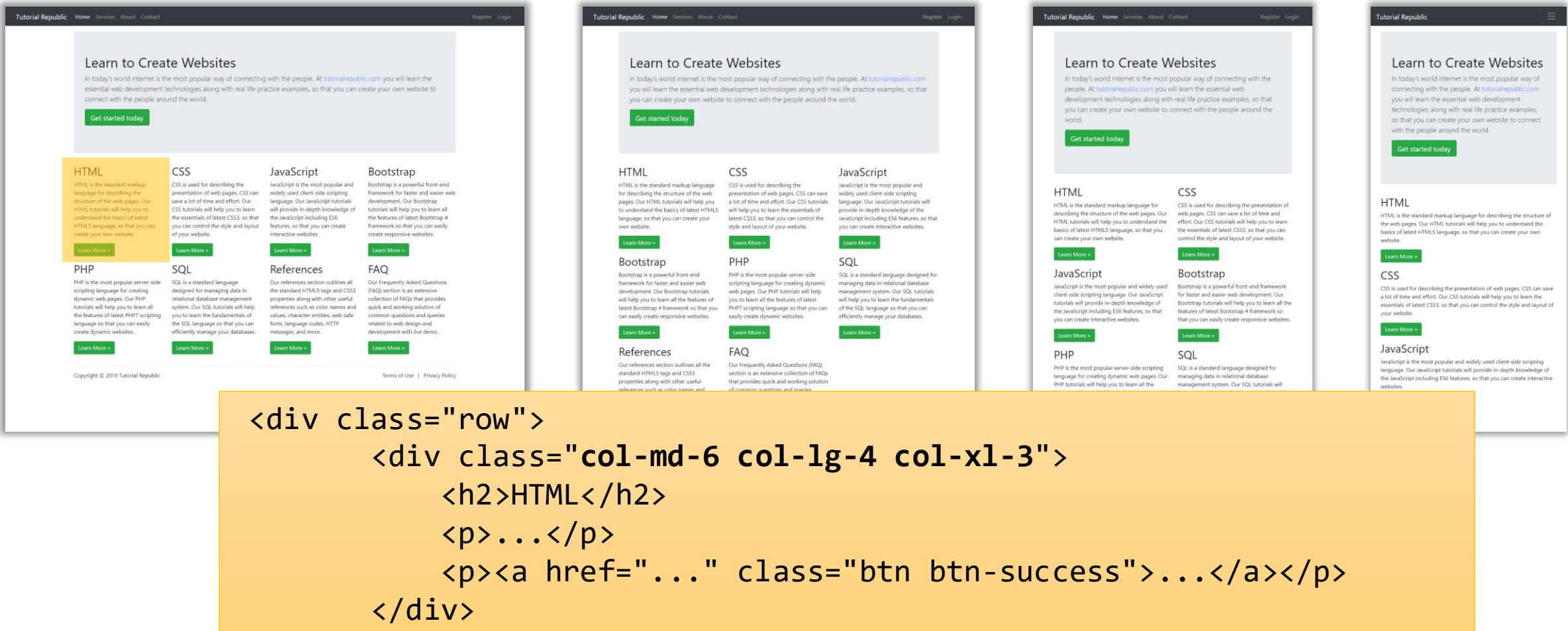
May choose to span a group of columns

Each column is tagged according to the screen size:

- xs (phones - <768px)
- sm (tablets - >=768px)
- md (small laptops - >=992px)
- lg (laptops and desktops - >1200px)



# Responsive Grid Layout



<https://www.tutorialrepublic.com/twitter-bootstrap-tutorial/bootstrap-responsive-layout.php>

# Other Grid Systems

Unsemantic (responsive, based on %)

The screenshot shows the Unsemantic website. At the top, there's a navigation bar with links for Home, About, Demo, CSS Documentation, and Sass Documentation. Below the navigation is a button labeled "Download Here" and a GitHub Repo link. The main content area has two sections: "What is it?" and "Example Usage". The "What is it?" section defines "Unsemantic" as an adjective and noun, with a note that it's a nonexistent word used by developers. The "Example Usage" section shows a snippet of CSS code for a grid system:

```
<div class="grid-container">
  <div class="grid-25">
    I am 25% wide.
  </div>
  <div class="grid-50">
    I am 50% wide.
  </div>
  <div class="grid-25">
    I am 25% wide.
  </div>
</div>
```

Below these sections are three columns: "Successor to 960.gs", "SE-Oh?", and "Built with Sass". The "Successor to 960.gs" column discusses the fluid grid system. The "SE-Oh?" column provides a comparison to the 960 Grid System. The "Built with Sass" column explains how Unsemantic uses Sass. Further down are sections for "Responsive Demo", "Adapt.js Demo", and "Browser Support". A note at the bottom states: "Note: If you reached this site by mistake, perhaps you are seeking Unsemantic's arch nemesis: Semantic.com". The footer includes links for GitHub and MIT license, and credits for Nathan Smith and Serev.

<https://unsemantic.com>

tailwindcss (responsive, flexible)

The screenshot shows the TailwindCSS website. At the top, there's a navigation bar with links for Docs, Components, Blog, Showcase, and a search bar. The main headline reads "Rapidly build modern websites without ever leaving your HTML." Below the headline, a subtext states: "A utility-first CSS framework packed with classes like `flex`, `pt-4`, `text-center` and `rotate-90` that can be composed to build any design, directly in your markup." There's a "Get started" button and a search bar. On the right, there's a testimonial box featuring a portrait of Sarah Dayan, a Staff Engineer at Algolia, who says: "Tailwind CSS is the only framework that I've seen scale on large teams. It's easy to customize, adapts to any design, and the build size is tiny." Below the testimonial is a block of CSS code:

```
1  <figure class="bg-slate-100 rounded-xl p-8 dark:bg-slate-800">
2    
3    <div class="pt-6 space-y-4">
4      <blockquote>
5        <p class="text-lg">
6          "Tailwind CSS is the only framework that I've seen scale on large teams. It's easy to customize, adapts to any design, and the build size is tiny."
7        </p>
8      </blockquote>
9      <div>
10        <img alt="Sarah Dayan" class="w-12 h-12 rounded-full" />
11        <div>
12          <p>Sarah Dayan</p>
13          <p>Staff Engineer, Algolia</p>
14        </div>
15      </div>
16    </div>
17  </figure>
```

<https://tailwindcss.com>

# Grid Structure

Main body:  
Mix of 2x and 3x  
columns

Alternating row  
types



Title area outside the grid

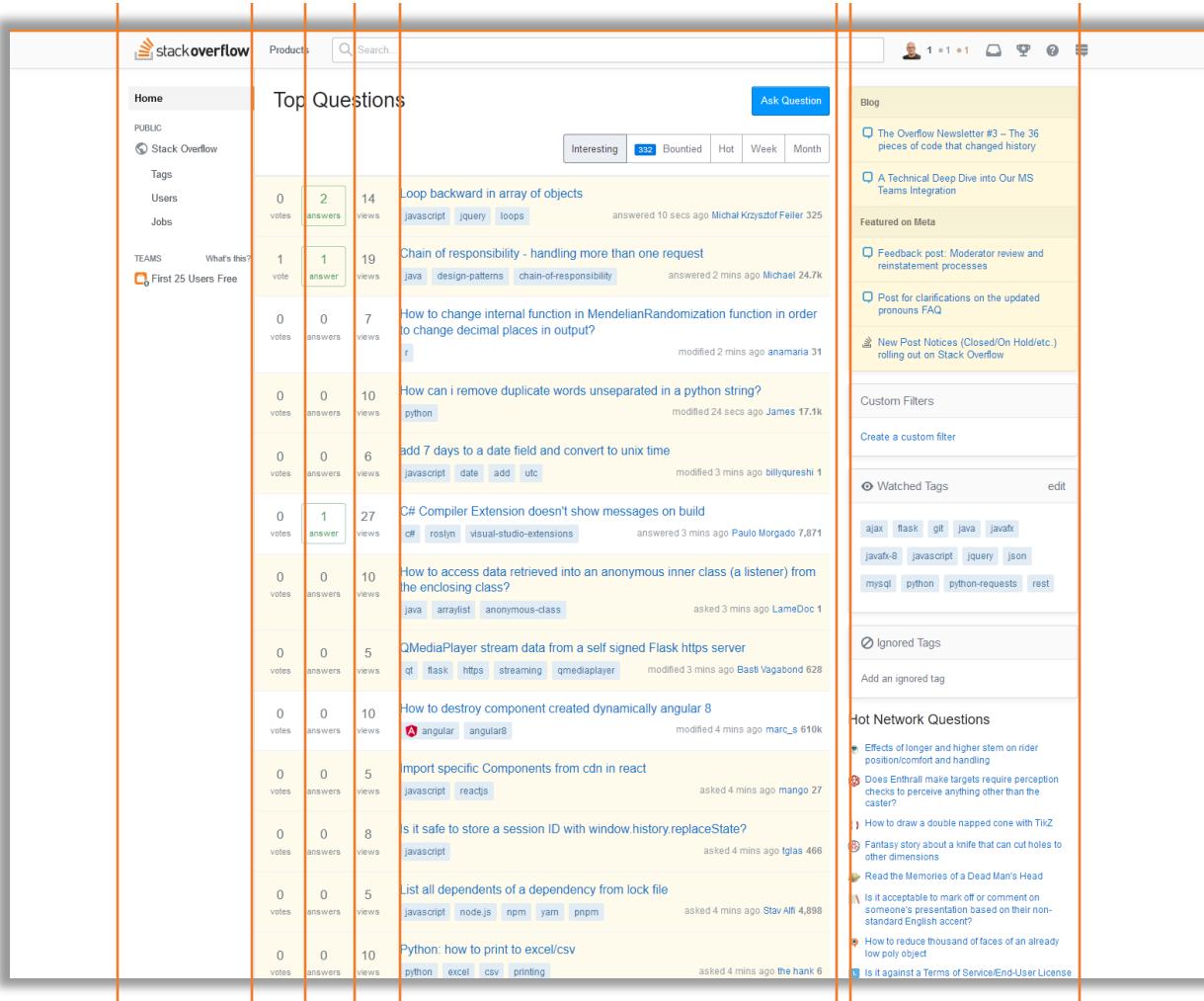
Right column for other types of articles

# Grid Structure

Main content  
(center, wide)

Navigation  
(left, smaller)

Related content  
(right, smaller)



# Example (2019)

Software								Top
1° anno								
Periodo	Codice	Lingua	Insegnamento	Crediti	Docente	Note	Vincoli	
1	01PDWOW	IT	<u>Information systems</u> ING-INF/05 (6) Oppure	6	M. Morisio	<a href="#">View</a>		
1	02GOLOV	IT	<u>Architetture dei sistemi di elaborazione</u>	10	P. Bernardi E. Sanchez Sanchez	<a href="#">View</a>		
1	02LSEOV	IT	<u>Computer architectures</u>	10	P. Montuschi	<a href="#">View</a>		
1	01SQJ0V	IT	<u>Data Science and Database Technology</u> ING-INF/05 (6) Oppure	8	S. Chiusano	<a href="#">View</a>		
1	01SQMOV	IT	<u>Data Science e Tecnologie per le Basi di Dati</u> ING-INF/05 (8) Oppure	8	E. Baralis	<a href="#">View</a>		
1	01OTW0V	IT	<u>Computer network technologies and services</u> ING-INF/05 (6) Oppure	6	M. Baldi	<a href="#">View</a>		
1	02KPN0V	IT	<u>Tecnologie e servizi di rete</u> ING-INF/05 (6)	6	G. Marchetto	<a href="#">View</a>		
2	02JEU0V	IT	<u>Formal languages and compilers</u> ING-INF/05 (6)	6	R. Sisto	<a href="#">View</a>		
2	05BIDOV	IT	<u>Ingegneria del software</u> ING-INF/05 (8) Oppure	8	G. Bruno	<a href="#">View</a>		
2	04GSPOV	IT	<u>Software engineering</u> ING-INF/05 (8)	8	M. Morisio	<a href="#">View</a>		
2	01UDFOV	IT	<u>Applicazioni Web I</u> ING-INF/05 (6) Oppure	6	E. Masala	<a href="#">View</a>		
2	01TXY0V	IT	<u>Web Applications I</u> ING-INF/05 (6) Oppure	6	F. Corno	<a href="#">View</a>		
2	02GRSOV	IT	<u>Programmazione di sistema</u> ING-INF/05 (10) Oppure	10	G. Cabodi	<a href="#">View</a>		
2	01NYH0V	IT	<u>System and device programming</u> ING-INF/05 (10)	10	S. Quer	<a href="#">View</a>		
2° anno								
Periodo	Codice	Lingua	Insegnamento	Crediti	Docente	Note	Vincoli	
1	01TYMOV	IT	<u>Insegnamento a scelta 1</u> <u>Information systems security</u> ING-INF/05 (6) Oppure	6		<a href="#">View</a>		
1	01UDUOV	IT	<u>Sicurezza dei sistemi informativi</u> ING-INF/05 (6)	6		<a href="#">View</a>		
1	01SQNOV	IT	<u>Software Engineering II</u> ING-INF/05 (6) <u>Crediti liberi</u>	6		<a href="#">View</a>		
1,2	29EBHOV		<u>Tesi</u> 30	30				
2			<u>Insegnamento a scelta 2</u>	6				
Insegnamento a scelta 1								
Periodo	Codice	Lingua	Insegnamento	Crediti	Docente	Note	Vincoli	
1	01TYDOV	IT	<u>Cloud Computing</u> ING-INF/05 (6)	6		<a href="#">View</a>		
1	01PDCOV	IT	<u>Digital control technologies and architectures</u> ING-INF/04 (6)	6		<a href="#">View</a>		
1	01TXZ0V	IT	<u>Distributed systems programming</u> ING-INF/05 (6)	6		<a href="#">View</a>	Si	
1	01NWPOV	IT	<u>Elaborazione dell'audio digitale</u> ING-INF/05 (6)	6		<a href="#">View</a>		
1	01UDGOV	IT	<u>Energy management for IoT</u> ING-INF/05 (6)	6		<a href="#">View</a>	Si	
1	02JSK0V	IT	<u>Human Computer Interaction</u> ING-INF/05 (6)	6		<a href="#">View</a>		
1	01SQJ0V	IT	<u>Machine Learning and Artificial Intelligence</u> ING-INF/05 (6)	6		<a href="#">View</a>		
1	01PDX0V	IT	<u>Modern design of control systems</u> ING-INF/04 (6)	6		<a href="#">View</a>		
1	01OUUV0V	IT	<u>Optimization methods and algorithms</u> MAT/09 (6)	6		<a href="#">View</a>		
1	0ACET0V	IT	MAT/09 (6)	6		<a href="#">View</a>		

# Example (same page in 2020)

Software

▼ 1° anno 2020/2021

Periodo	Codice	SSD	Insegnamento	Lingua	Crediti	Docente	Note	Orario
1	01PDWOW	ING-INF/05 (6)	Information systems	🇬🇧	6	M. Morisio (118 iscr.)	🕒	
1	02GOLOV	ING-INF/05 (10)	Architetture dei sistemi di elaborazione	🇮🇹	10	P. Bernardi (150 iscr.) E. Sanchez Sanchez (159 iscr.)	🕒	
oppure								
1	02LSEOV	ING-INF/05 (10)	Computer architectures	🇬🇧	10	P. Montuschi (207 iscr.)	🕒	
1	01SQJOV	ING-INF/05 (8)	Data Science and Database Technology	🇬🇧	8	S. Chiusano (172 iscr.)	🕒	
oppure								
1	01SQMOV	ING-INF/05 (8)	Data Science e Tecnologie per le Basi di Dati	🇮🇹	8	E. Baralis (254 iscr.)	🕒	
1	01OTWOW	ING-INF/05 (6)	Computer network technologies and services	🇬🇧	6	G. Marchetto (161 iscr.)	🕒	
oppure								
1	02KPNOV	ING-INF/05 (6)	Tecnologie e servizi di rete	🇮🇹	6	G. Marchetto (253 iscr.)	🕒	
2	02JEUOV	ING-INF/05 (6)	Formal languages and compilers	🇬🇧	6	R. Sisto (60 iscr.)	🕒	
2	05BIDOV	ING-INF/05 (8)	Ingegneria del software	🇮🇹	8	G. Bruno (132 iscr.)	🕒	
oppure								
2	04GSPOV	ING-INF/05 (8)	Software engineering	🇬🇧	8	M. Morisio (202 iscr.)	🕒	
2	01UDFOV	ING-INF/05 (6)	Applicazioni Web I	🇮🇹	6	E. Masala (91 iscr.) L. De Russis (57 iscr.)	🕒	
oppure								
2	01TXYOV	ING-INF/05 (6)	Web Applications I	🇬🇧	6	F. Corno (185 iscr.)	🕒	
2	02GRSOV	ING-INF/05 (10)	Programmazione di sistema	🇮🇹	10	G. Cabodi (100 iscr.) A. Savino (112 iscr.)	🕒	
oppure								
2	01NYHOV	ING-INF/05 (10)	System and device programming	🇬🇧	10	S. Quer (108 iscr.)	🕒	
▼ 2° anno 2021/2022								
Periodo	Codice	SSD	Insegnamento	Lingua	Crediti	Docente	Note	Orario
1			Insegnamento a scelta 1		6		🕒	
1	01TYMOV	ING-INF/05 (6)	Information systems security	🇬🇧	6		🕒	
oppure								
1	01UDUOV	ING-INF/05 (6)	Sicurezza dei sistemi informativi	🇮🇹	6		🕒	
1	01SQNOV	ING-INF/05 (6)	Software Engineering II	🇬🇧	6		🕒	
1,2			Crediti liberi		6		🕒	
1,2	29EBHOV		Tesi		30		🕒	
2			Insegnamento a scelta 2		6		🕒	

# Example (2015 vs. 2019)

## Add an address

**Full Name:**

**Address Line 1:**   
Street address, P.O. box, company name, c/o

**Address line 2:**   
Apartment, suite, unit, building, floor, etc.

**City:**

**State/Province/Region:**

**ZIP:**

**Country:**

**Phone Number:**

### Optional Delivery Preferences ([What's this?](#))

**Weekend Delivery:**

**Security Access Code:**   
For buildings or gated communities

Il tuo account > I tuoi indirizzi > [Nuovo indirizzo](#)

## Aggiungi un nuovo indirizzo

Ottimizza i tuoi colli quando desideri, presso i nostri punti self-service. Per aggiungere un punto di ritiro o un Amazon Locker, clicca [qui](#).

Paese/Regione

Nome e cognome

Indirizzo

Città

Provincia

Codice postale

Numero di telefono

Può essere utilizzato per aiutare consegna

## Aggiungi istruzioni di consegna

Consegna nel fine settimana

# Some Best Practices

- When designing a template, start from the longest block of text
- Left-aligned text is (usually) faster to skim
- Alignment guides the eye and reduces clutter
  - Avoid slight misalignments
  - Patterns and deviations are “automatically” detected
    - Deviate from a pattern for strategic reasons
  - Use visual proximity and scale to convey semantic information

# Colors

The most dangerous weapon in your toolset

I live inside my car leasing website all day Monday to Friday 9am-6pm. I lease the cheapest PCP and contract hire cars in the UK! - I am Ling, accept no substitutes

# LINGS CARS .com

Leader of the Pack - The UK's favorite car leasing website!

Contract hire cars from Ling Valentine. LINGS CARS is the UK's favourite car leasing website - On 2016 I leased over £85 million in cars!

**Stop**

**Believe it or not, this Gateshead-based website, featuring Mrs Ling jigging on her motorbike, is one of the biggest online drivers of car sales in Great Britain" 25th July 2017**

4 News

PUBLIC PICCADILLY

**Leader of the Pack**

"[Ling Valentine is] Britain's **BIGGEST** individual seller of new cars."

**BREXIT RISK FREE!** February 2017 **theguardian**

**LING'S BREXIT BORIS PROMISE:** If the UK leaves the EU with "no deal", tariffs may apply to EU built cars landing in the UK after Brexit day (31st Jan?). If this is the case with YOUR car, and if the price increases due to tariffs, YOU will be able to cancel the car order at **NO COST** to you. **YOU can order a new car from me, with NO BREXIT RISK.** - Ling

**CARS A-Z**

**ABARTH**

124 Spider Convertible  
595 Convertible  
595 Hatchback  
695 Convertible

**ALFA ROMEO**

Giulia Saloon  
Giulietta  
Stelvio Estate

**AUDI**

**MY BEST SELLING CAR LEASING DEALS!**

**500 IDEAS!**

**NICOLE...PAPA!**

**MEGA-HATCH!**

**Car Leasing Online Service Response Times**

**75 CUSTOMERS IN 'PROPOSAL'**

**129 CUSTOMERS IN 'ORDER'**

**Ling replies in...**

**0:03 07**

**Rent New** £127/mth including VAT

3 year cheap car leasing

9:35

**Rent New** £152/mth including VAT

3 year cheap car leasing

6:35

**Rent New** £157/mth including VAT

2 year cheap car leasing

6:23

**Audi A3 Sportback** to Chris WYMONDHAM, NR18

**1 DELIVERY TODAY**

Ford Ka+ to Arthur ATTLEBOROUGH, NR17

**21 DELIVERIES IN LAST WEEK**

- Renault Captur to Cath PONTEFRACT, WF81
- Mercedes GLC Coupe to Bill BEDLINGTON, NE22
- BMW 2 Series Convert... to Pingu DERBY, DE56
- Nissan Qashqai to Arlene GLASGOW, G11
- Volvo XC60 Estate to Saif MILTON KEYNES, MK8
- Seat Leon to Ben BARNESLEY, S70
- Skoda Kodiaq Estate to Hannah HAY-ON-WYE, HR3
- Renault Clio to Paul MIDDLEBROUGH, TS7
- Renault Clio to Paul MIDDLEBROUGH, TS7
- Seat Arona to Steve LONDON, SE18
- Seat Leon to Adam HATFIELD, AL10

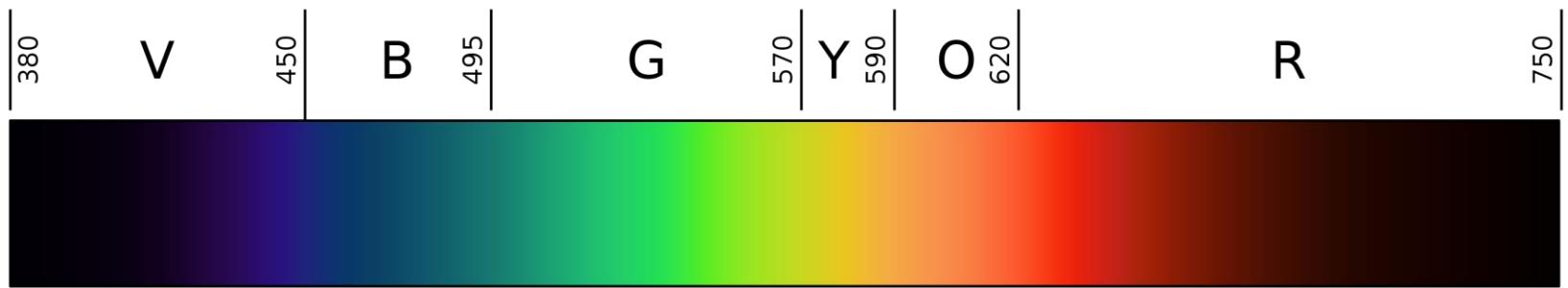
# Colors

- A powerful tool to improve interfaces by communicating **key information**
- Inappropriate use of colors can severely **reduce the performance** of an interactive system

# Colors: Suggestions

- Be careful, do not exaggerate
- Design in grayscale, first
  - Ensure information is conveyed by text and layout
- When adding colors, try to conserve the same luminance of the grayscale design
- Assign meaning to color
- Use a limited and consistent palette and use slight variations
- Avoid simultaneous display of pure (highly-saturated), spectrally extreme colors
  - e.g., no blue at the same time as red
  - desaturated combinations (pastels) are better

# Visible Spectrum

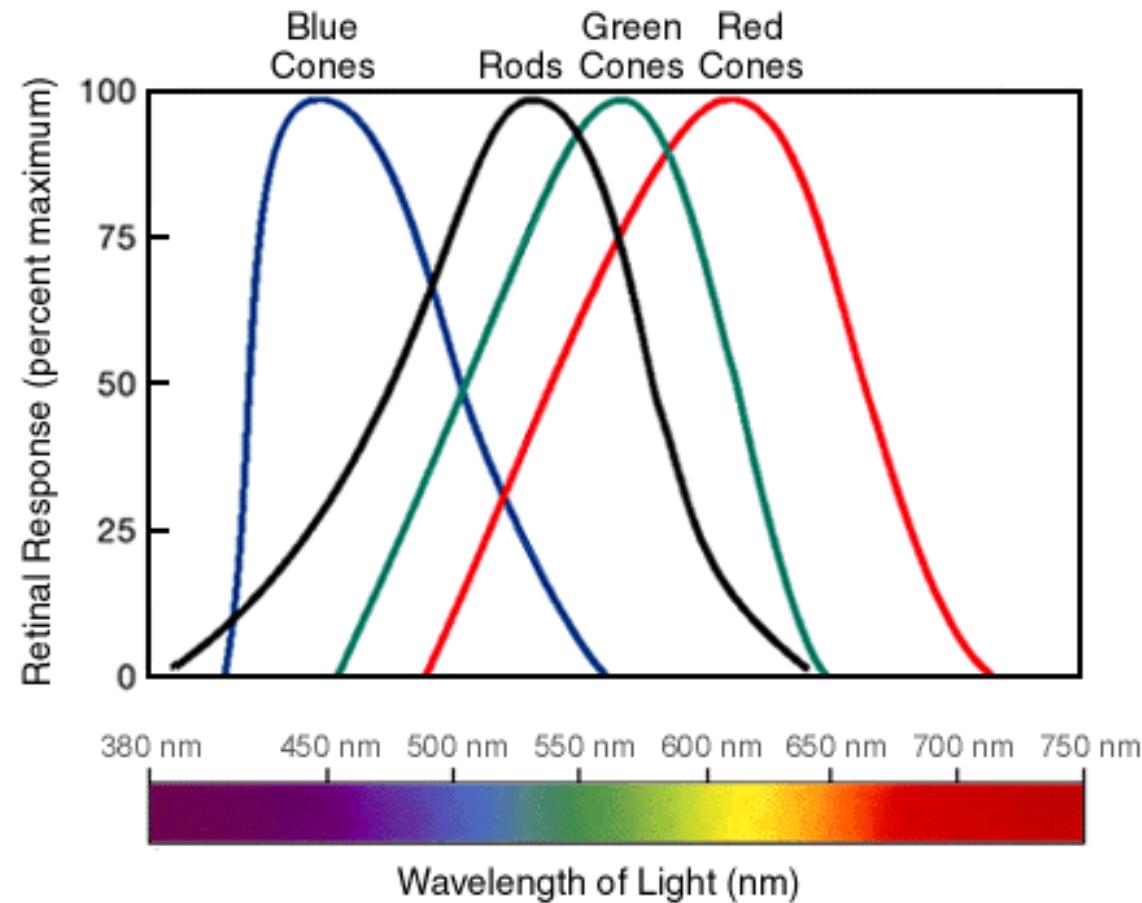


- UV spectrum ends on the left, IR starts on the right
- Wavelengths are in nm
- Source: [https://commons.wikimedia.org/wiki/File:Linear\\_visible\\_spectrum.svg](https://commons.wikimedia.org/wiki/File:Linear_visible_spectrum.svg)

# Human Vision

- **Human vision:** a highly complex activity, often the main source of information about the world
- The **eye:** a mechanism for receiving light and transforming it into electrical energy
  - light reflected from objects in the world and their image is focused upside down on the back of the eye
  - then, the receptors in the eye transform it into electrical signal which are passed to the brain
  - the brain detects, finally, pattern and movements

# Color Sensitivity of the Eyes



source: <https://askabiologist.asu.edu/rods-and-cones>

# Example

The image displays two identical screenshots of the Stack Overflow homepage, illustrating a design comparison between two different visual styles.

**Left Screenshot (Original Style):**

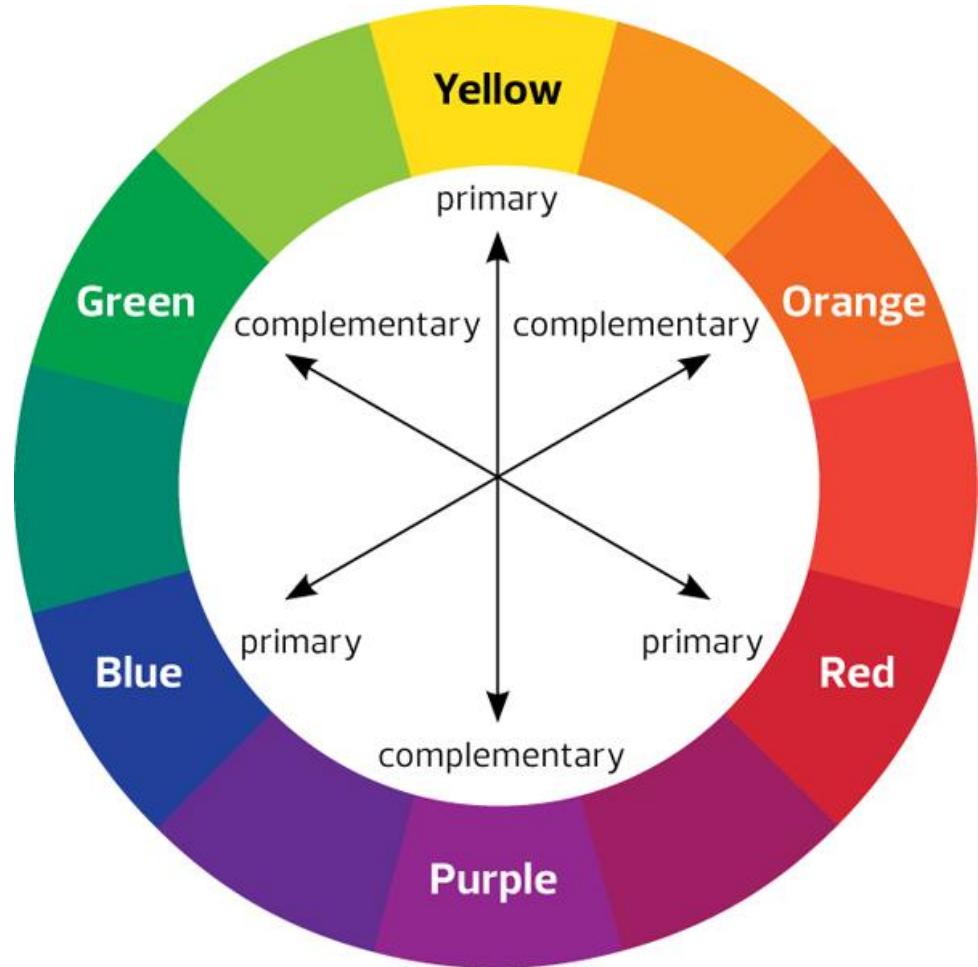
- Header:** Shows the Stack Overflow logo, navigation links (Home, Products, Search), and user stats (1 user, 1 answer).
- Top Questions:** A list of 10 questions with their titles, votes, answers, views, and last activity. Examples include "Loop backward in array of objects" (2 answers, 14 views) and "How to change internal function in MendelianRandomization function in order to change decimal places in output?" (7 views).
- Blog:** A section featuring the "Overflow Newsletter #3 – The 36 pieces of code that changed history" and "A Technical Deep Dive into Our MS Teams Integration".
- Featured on Meta:** A section featuring "Feedback post: Moderator review and reinstatement processes" and "Post for clarifications on the updated pronouns FAQ".
- Custom Filters:** A section titled "Create a custom filter".
- Watched Tags:** A section titled "edit" showing watched tags like ajax, flask, git, java, javascript, jquery, json, mysql, python, python-requests, rest, and lodash.
- Ignored Tags:** A section titled "edit" showing ignored tags like angular and angularjs.
- Hot Network Questions:** A list of 10 questions from other Stack Exchange sites, such as "Effects of longer and higher stem on rider position/comfort and handling" and "Is it safe to store a session ID with window.history.replaceState?".

**Right Screenshot (Alternative Style):**

- Header:** Shows the Stack Overflow logo, navigation links (Home, Products, Search), and user stats (1 user, 1 answer).
- Top Questions:** A list of 10 questions with their titles, votes, answers, views, and last activity. Examples include "Loop backward in array of objects" (2 answers, 14 views) and "How to change internal function in MendelianRandomization function in order to change decimal places in output?" (7 views).
- Blog:** A section featuring the "Overflow Newsletter #3 – The 36 pieces of code that changed history" and "A Technical Deep Dive into Our MS Teams Integration".
- Featured on Meta:** A section featuring "Feedback post: Moderator review and reinstatement processes" and "Post for clarifications on the updated pronouns FAQ".
- Custom Filters:** A section titled "Create a custom filter".
- Watched Tags:** A section titled "edit" showing watched tags like ajax, flask, git, java, javascript, jquery, json, mysql, python, python-requests, rest, and lodash.
- Ignored Tags:** A section titled "edit" showing ignored tags like angular and angularjs.
- Hot Network Questions:** A list of 10 questions from other Stack Exchange sites, such as "Effects of longer and higher stem on rider position/comfort and handling" and "Is it safe to store a session ID with window.history.replaceState?".

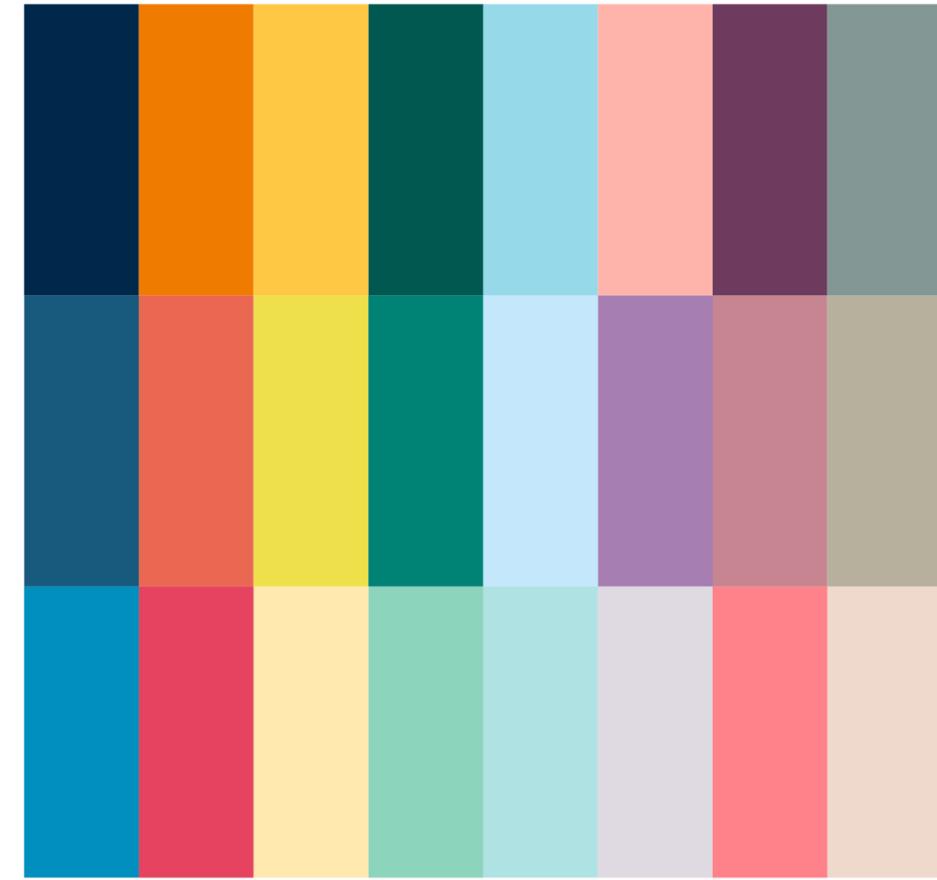
# The Color Wheel

- Aka the Hue Circle
- Pick non-adjacent colors
- Opponent colors go well together
  - Complementary colors
- Read more at  
<https://www.canva.com/colors/color-wheel/>



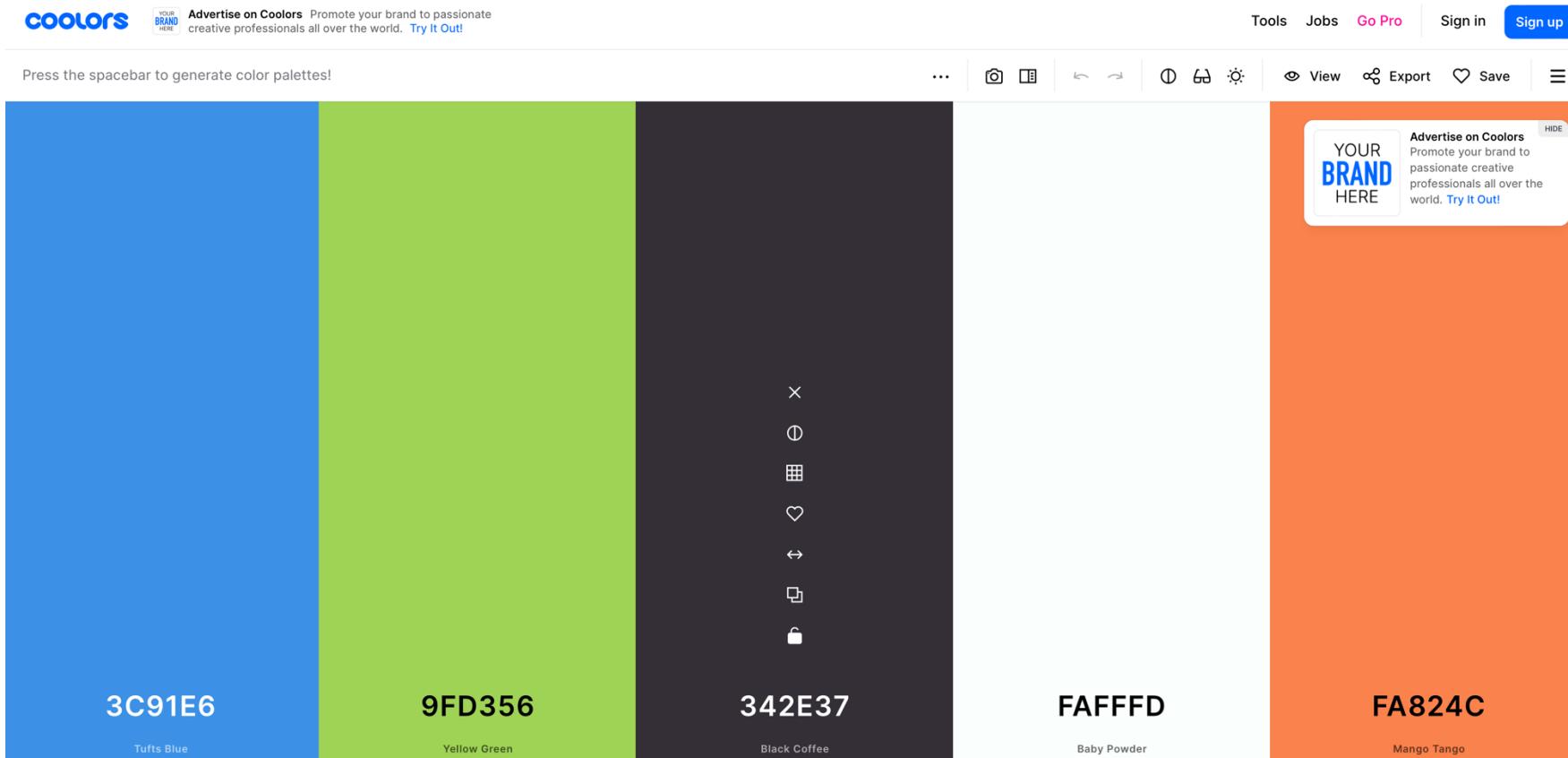
# Palettes - PoliTo

GERARCHIA COLORI



[https://www.politocomunica.polito.it/en/corporate\\_image/brand\\_and\\_visual\\_identity](https://www.politocomunica.polito.it/en/corporate_image/brand_and_visual_identity)

# Palettes Generator



<https://coolors.co>

# ColourLovers

COLOURLovers Browse Community Channels Trends Tools

Search palettes... Palettes Create Sign Up Log In

Adobe PALETTON envato Digital Marketplace

## Share Your Color Ideas & Inspiration.

COLOURlovers is a creative community where people from around the world create and share colors, palettes and patterns, discuss the latest trends and explore colorful articles... All in the spirit of love.

Join the Community!

CONNECT WITH COLOURLOVERS

Follow @COLOURlovers 1.59M followers

LOVERS PEAK

SadieSews on Vengeful 225  
Really nice look, with this! (-

MisteryMoments on CoffeeBerries  
I love your Template Design Style.. thanks

renniecat on Cold Night  
Beautiful!

GoldenHuesinBlue on Golden Fall  
Wow, very nice!

TongrenGirl on Comfort  
Wow....so beautiful!!!

TongrenGirl on Extraordinary  
I love this!!!!

TongrenGirl on Deep Waters  
Ooooo, fantastic colors!!!!

TongrenGirl on Race to Spring  
Very nice!!!

TongrenGirl on Race to Spring  
Thanks so much for coloring my

ALL WEDDING HOME FASHION WEB PRINT CRAFT DIGITAL ART

LATEST BLOG POSTS

View More

Why Marketing Automation is Rocket-Fuel for Remote Workforce 0 Comments

How to Become a Full-Time Creative and Do What You Love 0 Comments

Colors, Human Growth Hormones, and Creativity 0 Comments

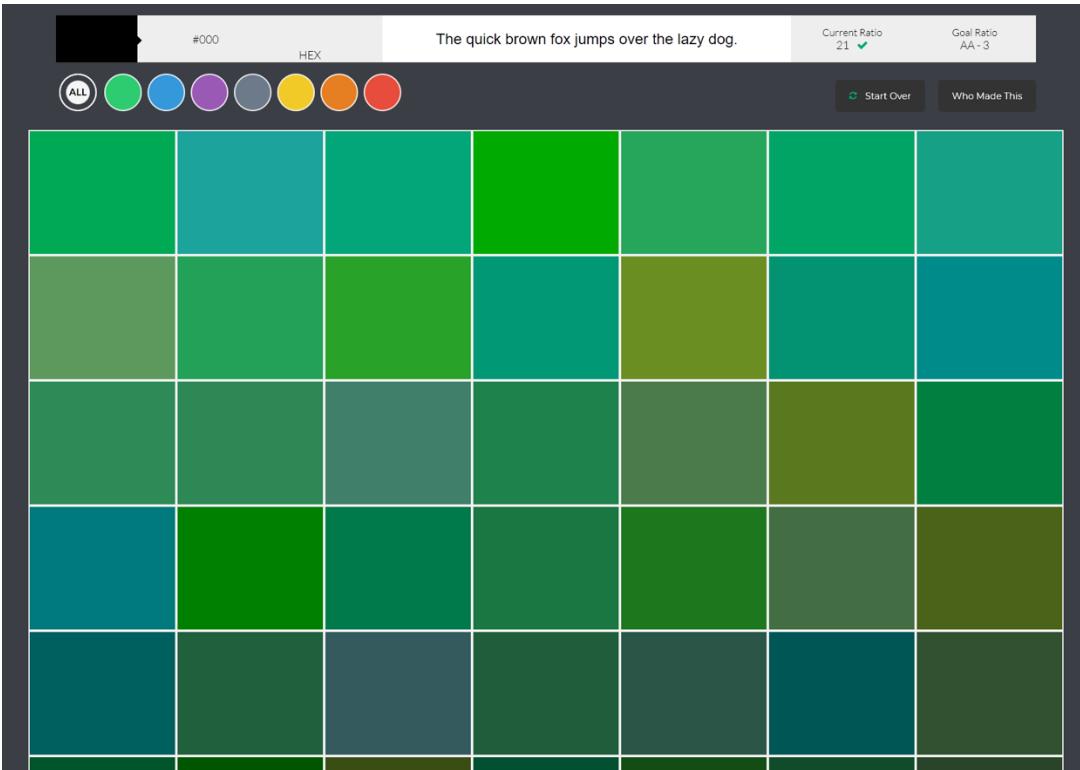
PALETTES Create + PATTERNS Create + COLORS Create +

Nineteen by Júlia Freire 0 try by Anomalin 0 light gray purple by macarver 0

garden palette 2 by macarver 0 PodCasting by 3sisters 0 slate purple by macarver 0

<https://www.colourlovers.com/>

# Color Contrast



<http://colorsafe.co/>

Default type color On light			Default type color On dark		
Primary	#000000	1a	Primary	#FFFFFF	1a
Secondary	#000000	0.54a	Secondary	#FFFFFF	0.54a
Disabled	#000000	0.26a	Disabled	#FFFFFF	0.26a
Link	#3367D6	1a	Link	#7BAAF7	1a
Positive	#0B8043	1a	Positive	#57BB8A	1a
Negative	#C53929	1a	Negative	#E67C73	1a
Warning	#EA6100	1a	Warning	#F7CB4D	1a

Google Chrome Palette

# Example

- Colors needing an explanation legend
- Time intervals are shaded with two different colors
  - “why is the first hour filled with a different color?”
- No indication of the “fill level”

Turni disponibili - Aule Studio - Sala studio al Secondo Piano di C.so Castelfidardo 39

Legenda turni prenotazione

Disponibile Passato Non prenotabile Prenotazioni non attive Turno al quale sei prenotato

Tutti gli orari sono da intendersi espressi secondo il fuso orario italiano

A partire da giorno 15 luglio 2020, è consentito l'uso della seguente Sala Studio della Sede Centrale:  
- Sala studio al Secondo Piano di C.so Castelfidardo 39, codice locale TO\_CIT11\_XP02\_001

Le sale studio sono aperte dalle ore 9.00 alle ore 18.00 dal lunedì al venerdì. L'accesso sarà consentito su due turnazioni orarie, dalle ore 9.00 alle 13.00 e dalle ore 14.00 alle ore 18.00

<<	Oggi	>>	21 Set 2020 - 27 Set 2020	1 giorno	3 giorni	Settimana lavorativa	Settimana	
		Lunedì 21 Set 2020	Martedì 22 Set 2020	Mercoledì 23 Set 2020	Giovedì 24 Set 2020	Venerdì 25 Set 2020	Sabato 26 Set 2020	Domenica 27 Set 2020
09:00	09:00 - 13:00 - prenotazioni: 36/36	09:00 - 13:00 - prenotazioni: 36/36	09:00 - 13:00 - prenotazioni: 35/36	09:00 - 13:00 - prenotazioni: 36/36	09:00 - 13:00 - prenotazioni: 34/36			
10:00								
11:00								
12:00								
13:00								
14:00	14:00 - 18:00 - prenotazioni: 36/36	14:00 - 18:00 - prenotazioni: 36/36	14:00 - 18:00 - prenotazioni: 34/36	14:00 - 18:00 - prenotazioni: 34/36	14:00 - 18:00 - prenotazioni: 26/36			
15:00								
16:00								
17:00								

# Reading and Navigating

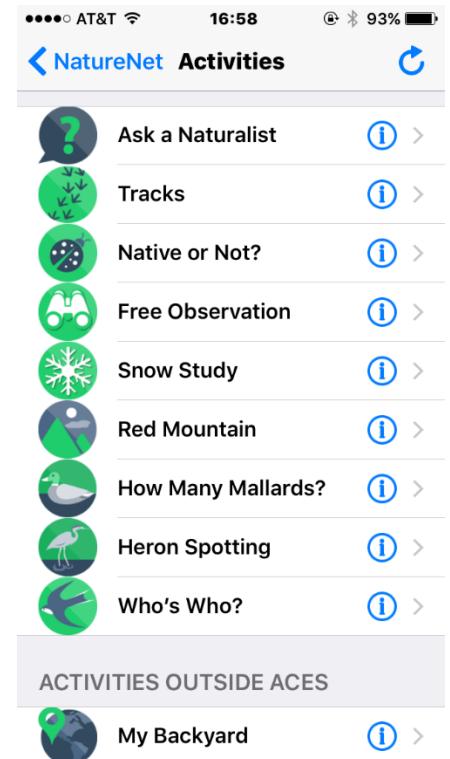
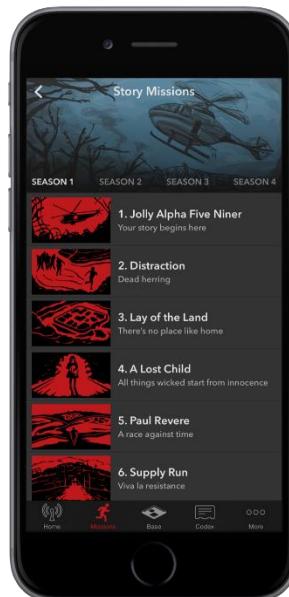
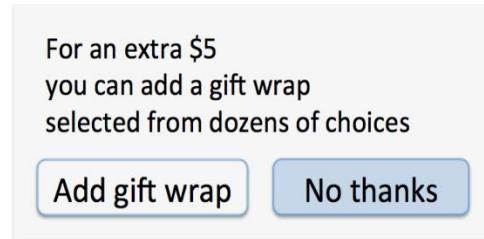
«Informavores» must quickly find the information they need

# Navigation

- Enables users to know where they are and to steer themselves to their intended destination
- Is about getting work done (or having fun) through a series of actions
- May consist of
  - **Task navigation:** successfully operating interactive applications, such as installing a mobile app, completing an on-line survey, or purchasing a ticket
  - **Web navigation:** finding information on a website or browsing social media
  - **Command menu navigation:** finding the action needed in a desktop application
- Has nothing to do with visual elegance / graphic shininess

# Navigation By Selection

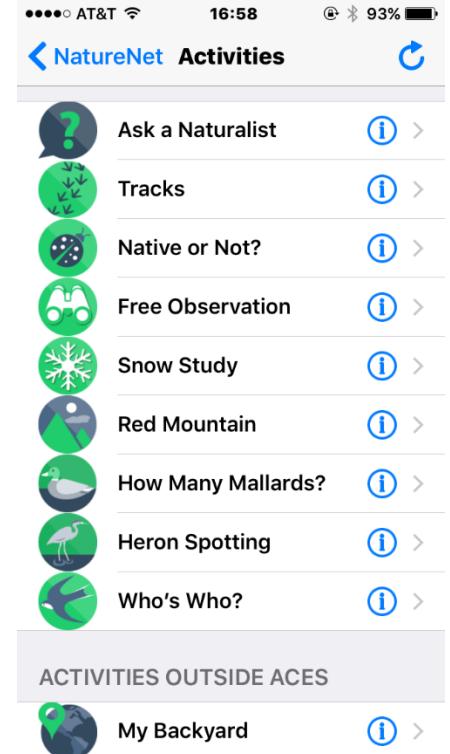
- Menu bars, pop-up menus, toolbars, palettes and ribbons
- Shortcuts and gestures for rapid interaction
- Long lists
- Linear versus simultaneous presentation



# Navigation By Selection

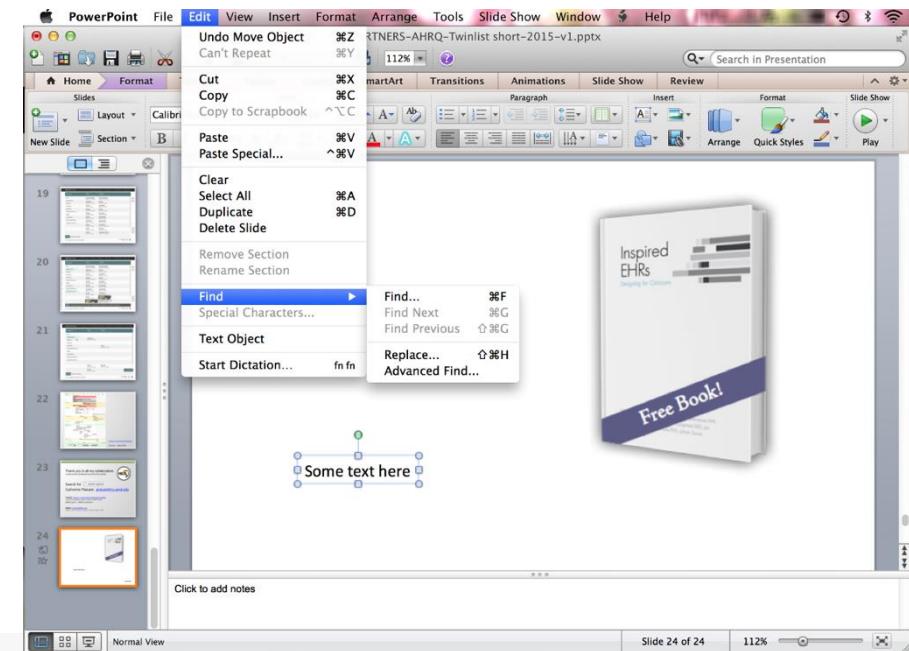
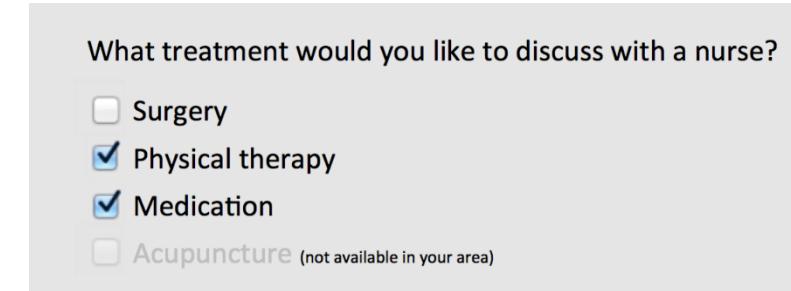
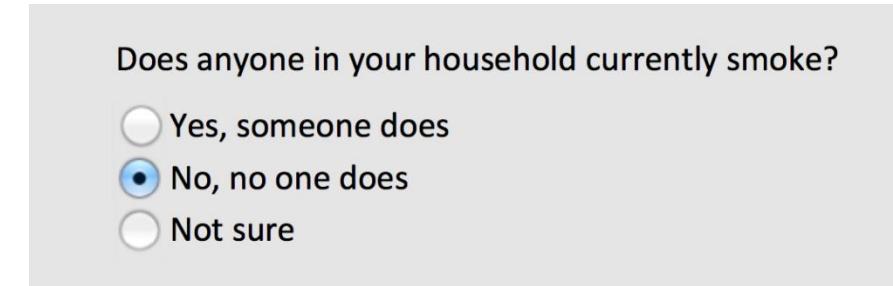
- Menu bars, pop-up menus, toolbars, palettes and ribbons
- **Shortcuts and gestures for rapid interaction**
- Long lists
- Linear versus simultaneous presentation

- Tap
- Long press
- Double tap
- Small swipe
- Large swipe
- Rapid swipe (fling)
- Pinch and spread
- 2-finger swipe
- ...



# Navigation By Selection

- Radio Buttons and Checkboxes
- Menu bars, pop-up menus, toolbars, palettes and ribbons



# Menus

The screenshot shows the official NASA website homepage. At the top, there is a horizontal navigation bar with links to "Missions", "Galleries", "NASA TV", "Follow NASA", "Downloads", "About", and "NASA Audiences". Below this is a secondary navigation bar with links to "International Space Station", "Journey to Mars", "Earth", "Technology", "Aeronautics", "Solar System and Beyond", "Education", "History", and "Benefits to You". A search bar is located at the top right. The main content area features several news stories and images. One prominent story is about the "One-Year Crew" on the International Space Station. Another story discusses the "Martian" Director Ridley Scott's comments on NASA's journey to Mars. There are also sections for an "Eclipse", "NASA Scientist Sheds Light on Rare Sept. 27 Supermoon Eclipse", "The Real Martians", "Space Travel", and "SDO Solar Mission". The footer contains the NASA logo, the text "National Aeronautics and Space Administration", and links to "NASA Official: Brian Dunbar", "No Fear Act", "FOIA", "Privacy", "Office of Inspector General", "Agency Financial Reports", and "Contact NASA".

The screenshot shows the NASA TV website. The top navigation bar includes links to "Home", "www.nasa.gov", "NASA TV", a search bar, and a menu icon. The main content area displays a video player showing two astronauts working on the International Space Station. Below the video, there is a caption that reads "One-Year Crew" and "Halfway There". Further down the page, there is another image of three people in a laboratory setting. The footer of the page is identical to the one on the main NASA site.

# Content Organization

- Organizing menus in a meaningful structure results in faster selection time and higher user satisfaction
- Approaches:
  - Linear sequence (e.g., in a wizard or survey)
  - Hierarchical structure (tree) that is natural and comprehensible (e.g., a store split into departments)
  - Network structure when choices may be reachable by more than one path (e.g., websites)

# Tree-like Content Organization

▼ Help      Wish List      Gift Registry      Classes & Events      Store Locator       Checkout

Welcome to REI! | [Log In](#) or [Register](#)

**FREE SHIPPING** With \$50 minimum purchase.

**REI** Find great gear and clothing 

**SHOP REI** **SHOP REI OUTLET** **TRAVEL WITH REI** **LEARN** **BLOG** **MEMBERSHIP** **STEWARDSHIP**

Camp & Hike Climb Cycle Fitness Run Paddle Snow Travel Men Women Kids Footwear More **Deals**

**Bikes**  
- Mountain Bikes  
- Road Bikes  
- Hybrid Bikes  
- Kids' Bikes  
**Bike Helmets**  
- Road Helmets  
- Mountain Bike Helmets  
- Kids Helmets

**Cycling Clothing**  
Jerseys  
Jackets  
Shorts  
Tights and Pants  
Accessories

**Cycling Shoes**  
Road Shoes  
Mountain Bike Shoes

**Bike Accessories**  
Computers  
Lights  
Locks  
Pumps  
Racks  
Trainers  
Messengers/Backpacks  
Panniers/Bike Bags

**Bike Components**  
Brakes  
Saddles/Seat Posts  
Tires, Tubes and Wheels  
Tools and Maintenance  
Drivetrain Components  
Pedals  
Handlebars

  
**GIVE THE GIFT OF GEAR**  
ANYTIME, ANYWHERE  
REI gift & e-gift cards  
[Buy now ▶](#)

Car Racks | Novara Cycling | Cycling Deals | All Cycling

Deals (31)

**▼ Features**

Moisture wicking (27)  
 Quick drying (26)  
 Sun-protective fabric (22)  
 Waterproof (15)  
 Insulated (11)  
 Earflaps (6)  
 Made in USA (5)

[See 8 More](#)

**▼ Brand**

[Clear](#)  
 686 (6)


 (1)  
REI Rainwall Rain Jacket - Girls'  
\$31.83 - \$64.50 [Compare](#)

 (1)  
REI Rainwall Rain Pants - Kids'  
\$49.50 [Compare](#)

 (9)  
REI Sahara Convertible Pants - Girls'  
\$44.50 [Compare](#)


**ONLY AT REI**

# Rules for Tree-like Organization

- Use **task semantics** to organize menus
- Limit the **number of levels** (i.e., prefer broad–shallow to narrow–deep)
- Create groups of **logically similar** items: e.g., Level 1: countries, Level 2: states, Level 3: cities
- Form groups that **cover all possibilities**: e.g., Age ranges: [0–9] [10–19] [20–29] and [ $\geq 30$ ]
- Make sure that items are **non-overlapping**: e.g., use “Concerts” and “Sports.” over “Entertainment” and “Events”
- Arrange items in each branch by **natural sequence** (not alphabetically) or **group** related items
- Keep **ordering** of items **fixed** (or possibly duplicate frequent items in dedicated section of the menu)

# Example

**Tool Prenotazioni**



Selezionare l'ambito per il quale ci si intende prenotare

Ambiti per i quali è possibile effettuare una prenotazione

- Aule Studio
- Biblioteca
- Segreteria generale studenti

**Tool Prenotazioni**



Selezionare l'ambito per il quale ci si intende prenotare

Ambiti per i quali è possibile effettuare una prenotazione

- Aule Studio
- Biblioteca
- Segreteria generale studenti

**Aule Studio - Selezione Aula Studio**

- Sala studio al Secondo Piano di C.so Castelfidardo 39
- Sala studio sotto l'aula 7

**Turni disponibili - Aule Studio - Sala studio al Secondo Piano di C.so Castelfidardo 39**

Legenda turni prenotazione

Disponibile	Passato	Non prenotabile	Prenotazioni non attive	Turno al quale sei prenotato
-------------	---------	-----------------	-------------------------	------------------------------

Tutti gli orari sono da intendersi espressi secondo il fuso orario italiano

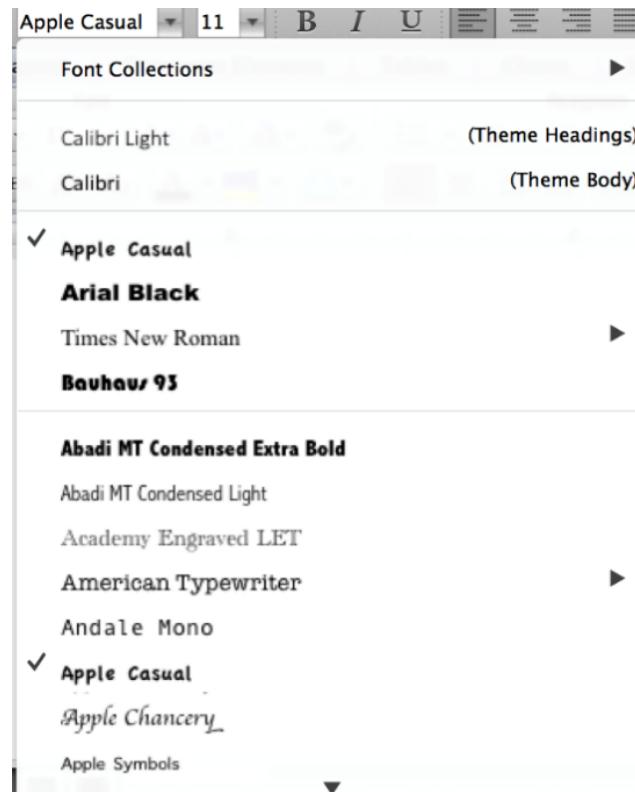
A partire da giorno 15 luglio 2020, è consentito l'uso della seguente Sala Studio della Sede Centrale:  
 - Sala studio al Secondo Piano di C.so Castelfidardo 39, codice locale TO\_CIT11\_XP02\_001

Le sale studio sono aperte dalle ore 9.00 alle ore 18.00 dal lunedì al venerdì. L'accesso sarà consentito su due turnazioni orarie, dalle ore 9.00 alle 13.00 e dalle ore 14.00 alle ore 18.00

14 Set 2020 - 18 Set 2020						1 giorno	3 giorni	Settimana lavorativa	Settimana	
		Lunedì 14 Set 2020	Martedì 15 Set 2020	Mercoledì 16 Set 2020	Giovedì 17 Set 2020	Venerdì 18 Set 2020				
09:00	09:00 - 13:00 - prenotazioni: 36/36	09:00 - 13:00 - prenotazioni: 33/36	09:00 - 13:00 - prenotazioni: 36/36	09:00 - 13:00 - prenotazioni: 32/36	09:00 - 13:00 - prenotazioni: 35/36					
10:00										
11:00										
12:00										
13:00										

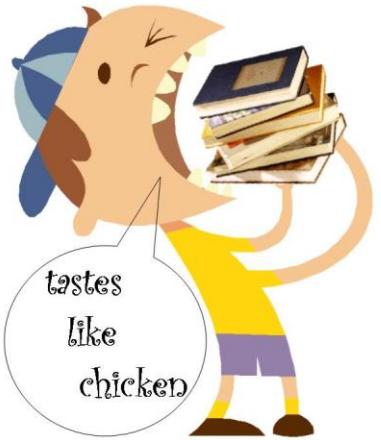
# Menu Grouping: example

- 3 groups
  - Template styles
  - Frequently used fonts
  - All fonts
- Alphabetical order within each group
  - Lack of a semantic ordering
- Preview for recognition
- Scrollable list



# Information Scent

- Informavores orient themselves using *information scent*
- How can we figure out how to get the information we want?
- Do we realize what options are available to us?
- Web pages (and UIs general) provide cues to suggest where to find information
  - Icons, Menus, Breadcrumbs, Color coding, ...



Informavore, an organism that consumes information

# Poor Information Scent

- Users flailing around...
  - Do not know where to go
- Low confidence
  - Users are not sure of their actions, both before executing it and after they see its effects
- Back button
  - When it's used too often...

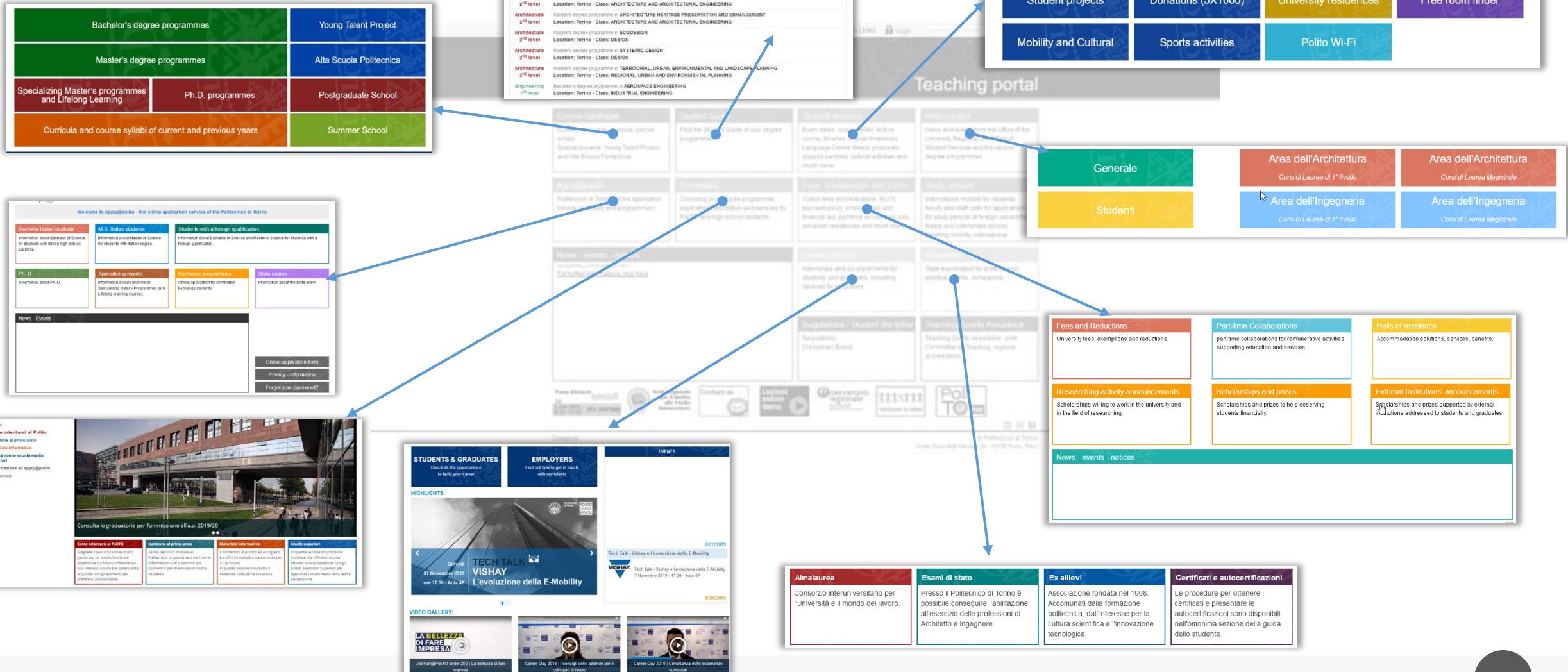
# Example

The screenshot shows the homepage of the Politecnico di Torino Teaching portal. At the top, there is a navigation bar with links for 'The Politecnico' (selected), 'Teaching', 'Research', 'Business', and 'International Campus'. It also includes language options ('ITA | ENG'), a login button, and a search bar. The main header features the university's logo and the text 'POLITECNICO DI TORINO'. Below the header, the page title 'Teaching portal' is displayed. The content area is organized into several colored boxes:

- Course catalogue**: Course catalogue, curricula, course syllabi. Special projects: Young Talent Project and Alta Scuola Politecnica.
- Student Guide**: Find the Student Guide of your degree programme.
- Student services**: Exam dates, course finder, lecture rooms, libraries, course timetables, Language Centre, thesis proposals, support services, cultural activities and much more.
- Notice board**: News and events from the Office of the University Registrar, the Office of Student Services and the various degree programmes.
- Apply@polito**: Politecnico di Torino online application service (all levels and programmes).
- Orientation**: Choosing your degree programme, application information and services for PoliTO and high school students.
- Fees, scholarships and prizes**: Tuition fees and reductions, IELTS payment policy, scholarships and financial aid, part-time on-campus jobs, university residences and much more.
- Study abroad**: International mobility for students, faculty and staff; calls for applications for study periods at foreign universities, thesis and internships abroad, teaching mobility, international.
- News - events - notices**: For further informations click here.
- Career service**: Internships and job placements for students and graduates, recruiting services for employers.
- Graduates**: State examination for professional practice, alumni, AlmaLaurea.
- Regulations / Student discipline**: Regulations, Disciplinary Board.
- Teaching Quality Assurance**: Teaching Quality Assurance, Joint Committee on Teaching, regional accreditation.

At the bottom, there are links for 'Posta Studenti', 'email' (with phone number 010-33300 011-8997965), 'Ente Regionale per il Diritto allo Studio Universitario' (with logo), 'Contact us' (with envelope icon), 'Lezioni online demo' (with play icon), 'Osservatorio regionale' (with logo), 'POLITECNICO DI TORINO' (with logo), and 'PoliTO App'. There are also social media icons for YouTube, Facebook, and Twitter, along with a copyright notice: © Politecnico di Torino Corso Duca degli Abruzzi, 24 - 10129 Torino, ITALY.

# Example



# Example

**Survey@Polito**

Administration -- Logged in as: corno

**Survey Smart Home Survey (ID:365355)**

**Title:** Smart Home Survey (ID 365355)  
**Survey URL (English):** <https://survey.polito.it/365355/lang-en> [EN] [DE] [IT] [FR] [ES]

**Description:** This very short survey aims at exploring the future and expected user interaction between user and smart environments, in particular smart homes. The research goal is to update, and compare, the research findings of a similar survey held in year 2010 (5 years ago). The expected completion time for this survey is 5 minutes or less.

**Welcome:** Thank you for agreeing to take part in this survey. All the answers you give are anonymous, and the data-set will be released as open data after the survey ends. You may choose to reply in any of the supported languages, preferably your mother tongue.

**End message:** Thanks for completing the survey. The results will be available on the website <http://elite.polito.it/2380988/> The paper describing the previous survey (in 2010) is available at: <http://porto.polito.it/2380988/>

**Administrator:** Fulvio Corno (fulvio.corno@polito.it)

**Start date/time:** -

**Expiry date/time:** -

**Template:** default

**Base language:** English

**Additional languages:** French  
German  
Italian  
Portuguese  
Spanish

**End URL:** e-Lite research group webpage

**Number of questions/groups:** 11/3

**Survey currently active:** Yes

**Survey table name:** beta\_survey\_365355

**Hints:** Answers to this survey are anonymized.  
It is presented group by group.  
Participants can save partially finished surveys  
Basic email notification is sent to: fulvio.corno@gmail.com  
Regenerate question codes: [Straight] [By group]

LimeSurvey  
Version 1.92+ Build 120919

Like it? Donate to LimeSurvey

# Common Problems

- Unexpected categories
- Short links
- Hidden navigation
- Icons are too generic, or not easily recognizable

## Icons

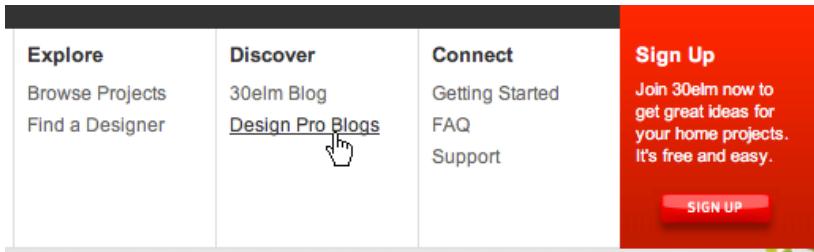
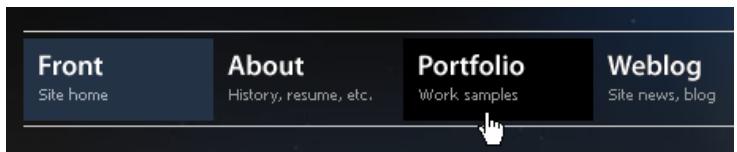
- Icons facilitate recognition over recall
    - When they are consistently used, and frequently visible
  - Redundant coding helps recognition and memorization
    - Icon + Text + Tooltip + Context



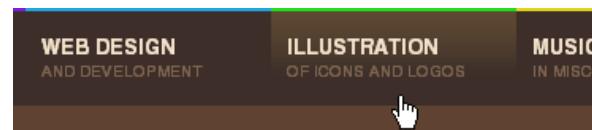
# Links

- Always use multi-word links
  - Download the [next assignment template](#)
  - Assignment template: click [here](#)
- Straight language, not jargon
  - [Scor-o-matic](#) download
  - Download the [spreadsheet for computing scores](#)

# “Speaking” block navigation



A screenshot of a website's 'Who We Are' section. It features a large image of a person, the text 'Get to know us a little better', and a yellow 'SIGN UP' button. A mouse cursor is hovering over the 'SIGN UP' button.



A screenshot of a website's sidebar or footer section. It lists several services: 'Newsletter' (Free newsletter), 'Store' (Maximize your ministry), 'Events' (Attend an event near you), 'Podcast' (Free audio training), 'Coaching' (Networks for Worship Leaders), and a 'free resources' section.

# Forms

- Logical field grouping
  - Sections
    - Dividers
    - Columns (spacing)
  - Titles
- Real-time error checking and validation feedback
  - Suggestions for correction
- Explicit submit button

**Create an IEEE Account** [?](#) [X](#)

\* Required field

Provide your personal information

\* Given/First name: Catherine

Middle name:

\* Last/Family/Surname: Plaisant

Enter e-mail address & password

The e-mail provided here will be the username of your account.

\* E-mail address: cplaisant@

\* Re-enter e-mail address:

**⚠** The e-mail address provided is not in a valid e-mail format (for example: j.doe@nomail.com). Please try again.

\* Password: **Your password is good**

Passwords must be between 8 and 64 characters, and include at least one number. [More...](#)

\* Confirm password:

Set security questions

For your security, IEEE Accounts are required to have two security questions and answers.

\* Security question 1: Select

\* Type your answer:

\* Security question 2: Select

\* Type your answer:

[Privacy & Opting Out of Cookies](#)

[Create Account and Continue Joining](#) [Cancel](#)

# Form Elements and UI Elements

The collage illustrates a variety of user interface elements:

- Checkboxes: NonFederal (99) and Federal (57).
- Radio buttons: Yes and No.
- Dropdown menu: Find your state or... Go.
- Date pickers: SEP 18<sup>th</sup> 2010 and JUN 22.
- Social sharing buttons: Send, Post, Tweet.
- Sliders: ON OFF.
- List boxes: Are like dropdowns, But they let you make multiple selections, Like checkboxes do.
- Navigation bar: Menu Item, Messages 1, About Us.
- Text input fields: Text input fields let you input text.
- General Settings: General Settings, Your Profile, Sign Out.
- Calendar: Sep. 2010 calendar showing the month of September 2010.
- File browser: A grid of icons representing files and documents.
- Image slider: A horizontal slider with five gray squares and arrows for navigation.
- Page navigation: Page numbers 1-10, Previous, Next, and page ranges 246-247.
- Tags: Costs (72), Health Conditions (54), Improving Care (53), Prevention (50), Rights, Protections and Benefits (135), Insurance Coverage (141).
- Search interface: Navigation Crystal Clear, Search Option One, Search Option Two, Search Option Three, Enter Keywords, Category, SEARCH, and a dropdown menu for Search: Everything, Entries, Photos, Videos, Audio.
- Progress bar: A horizontal progress bar divided into three segments labeled 1. Skills, 2. Location, and 3. Finish.
- Step navigation: Step 1: Select your plan, Step 2: Select your plan, Step 3: Select your plan.
- Form buttons: Clean, Fresh, Modern, Unique, and a plus sign button.

<https://www.usability.gov/how-to-and-tools/methods/user-interface-elements.html>

# Example: Redesign This

Attenzione, i seguenti insegnamenti sono in corso di spegnimento potranno essere sostenuti entro la sessione sotto indicata. Se terminata la sessione d'esame non risulteranno ancora superati, verranno sostituiti con l'insegnamento riportato in tabella.

Codice	Nome insegnamento	Crediti	Cod Ins Sostituto	Nome Ins Sostituto	Crediti sostituto	Scadenza esame
12BHDLZ	Informatica	8	14BHDLZ	Informatica	8	9/2021

Se non è ancora stato specificato un sostituto, il referente del corso provvederà in seguito a segnalare con quali esami sostituire gli spenti

# Reading Content

Organizing text and content for maximum visibility

# Reading Content

“How people  
read on-line?”

“They don’t”

How Users Read on the Web  
by Jakob Nielsen on September 30, 1997  
<https://www.nngroup.com/articles/how-users-read-on-the-web/>

# Eye Tracking



- Observe eye movements
  - One or more cameras
  - Usually in infra-red
- Infer where the user was looking  
(on the screen)
- Record the positions where your gaze will go
- Combine observations from many users

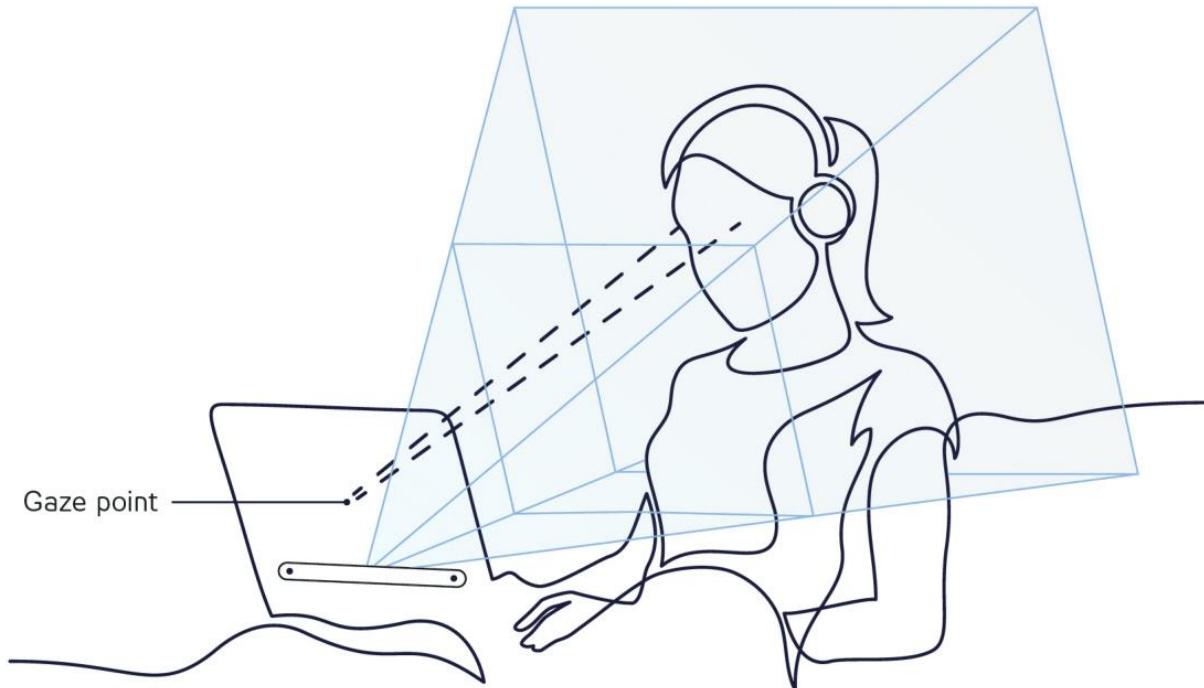
# Eye Trackers



source: <https://www.tobii.com>

# Eye Tracker: How It Works

- 1 An eye tracker consists of cameras, projectors and algorithms.
- 2 The projectors create a pattern of near-infrared light on the eyes.
- 3 The cameras take high-resolution images of the user's eyes and the pattern.
- 4 Machine learning, image processing and mathematical algorithms are used to determine the eyes' position and gaze point.

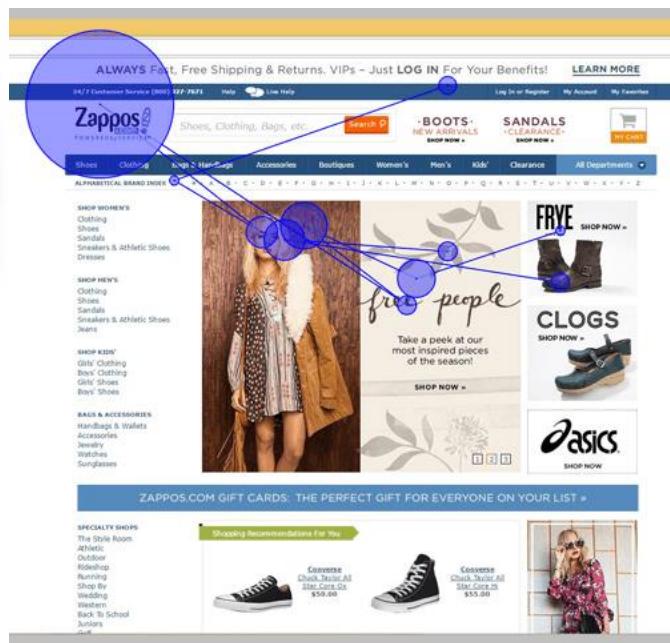


source: <https://www.tobii.com/group/about/this-is-eye-tracking/>

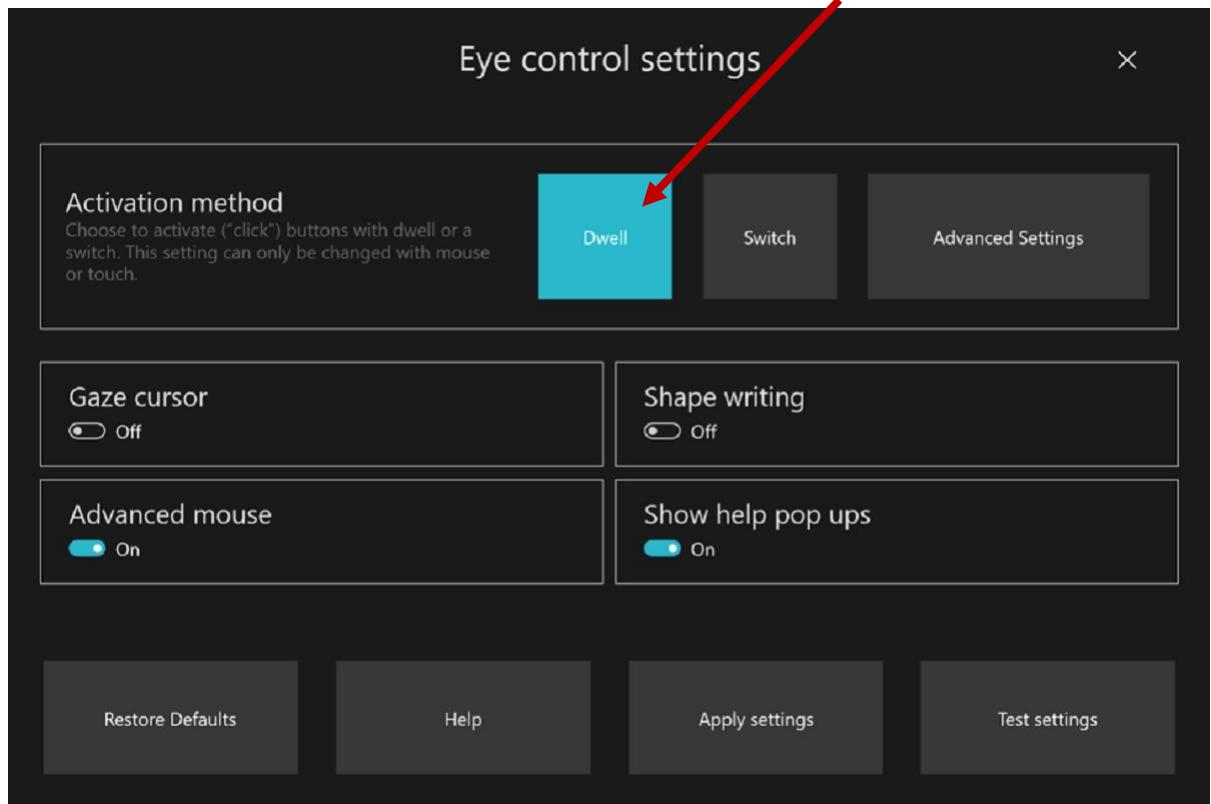
# Eye Tracker: Examples



Heatmap and scan path analysis



Beware the Midas' Touch!



Windows 10 Eye Control Settings

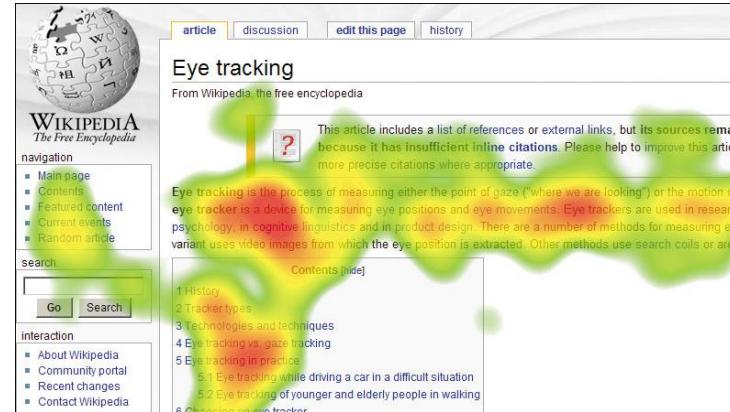
# Location on the Page

Eye tracking studies show where the users actually look on the page

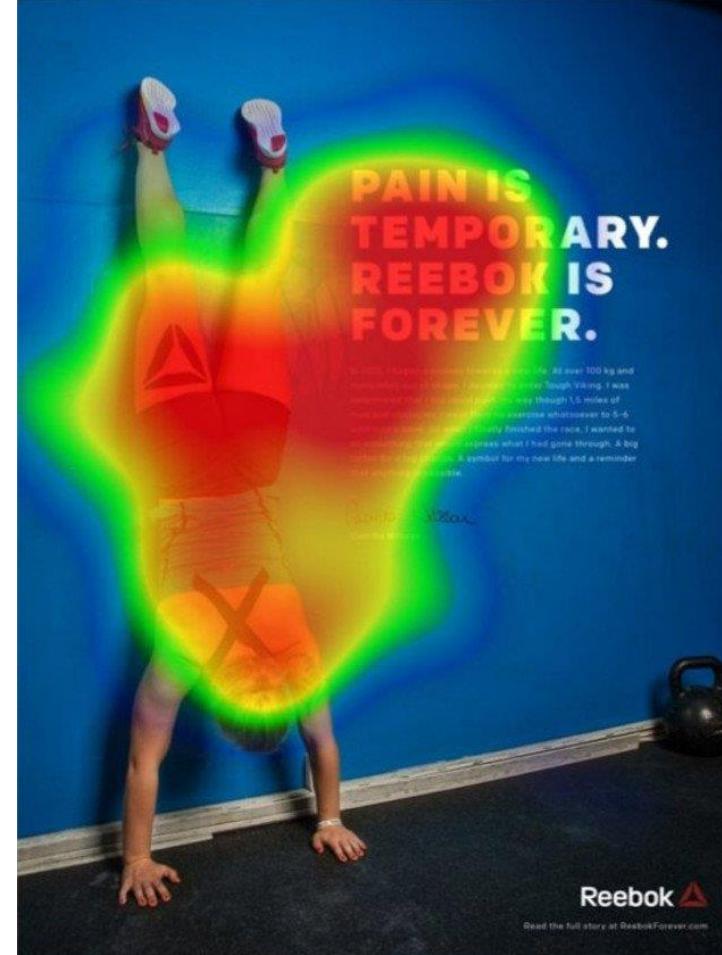
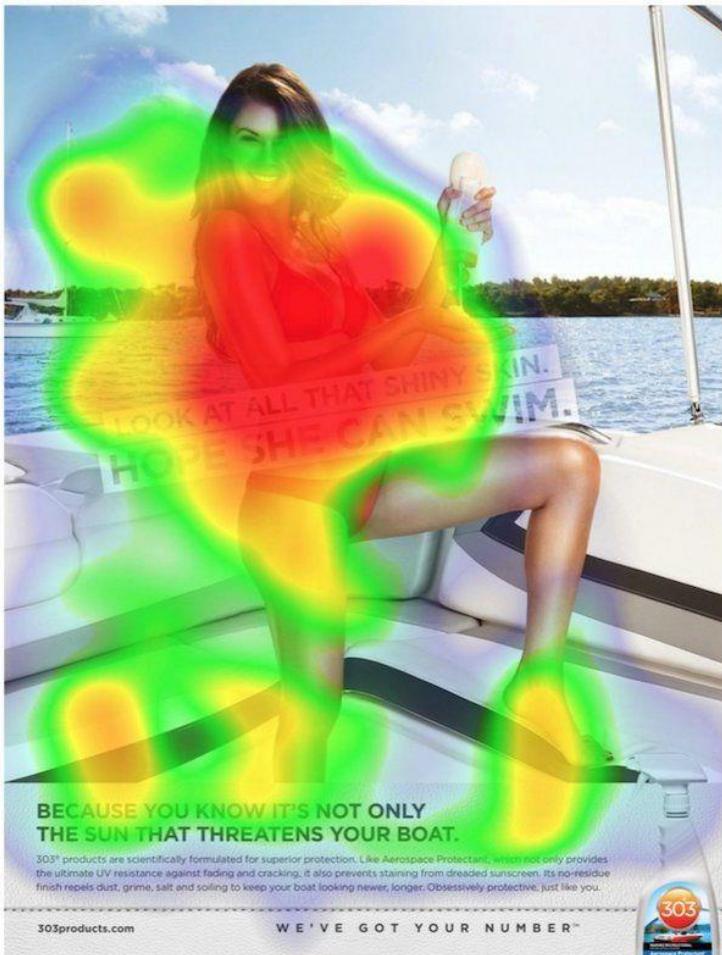
Search “eye tracking heat map” and see the major patterns

Users “glance” and spend limited amount of time on each page.

F-shaped pattern



# Did Anyone Ever Look at the Product Name?

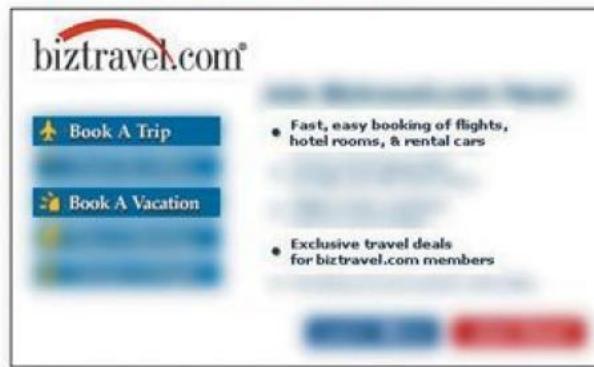


# Scanning

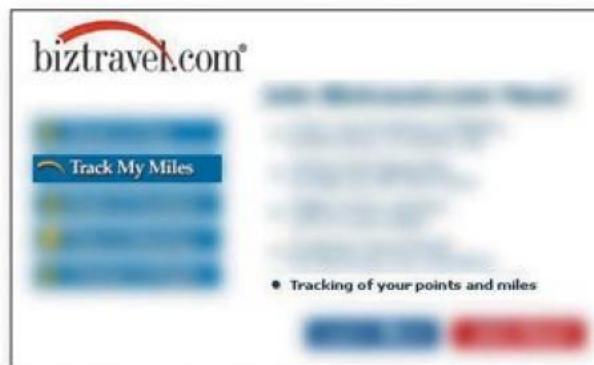
## WHAT DESIGNERS BUILD...



## WHAT USERS SEE...



I want to  
buy a  
ticket.



How do I  
check my  
frequent  
flyer miles?

# Experiment

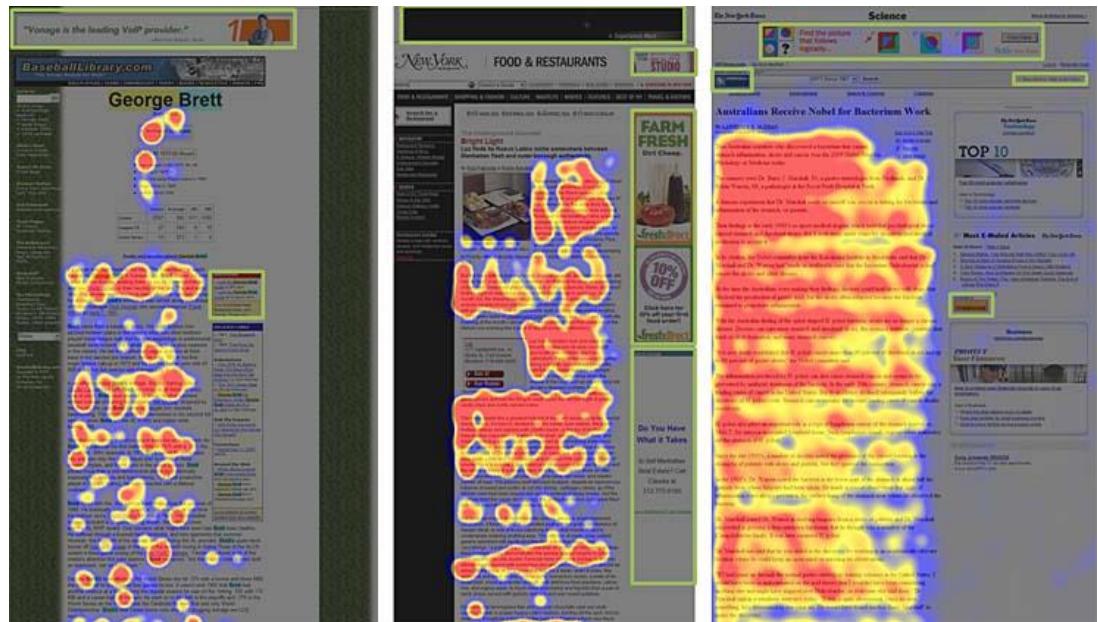
Site Version	Sample Paragraph	Usability Improvement (relative to control condition)
<b>Promotional writing (control condition)</b> using the "marketese" found on many commercial websites	Nebraska is filled with internationally recognized attractions that draw large crowds of people every year, without fail. In 1996, some of the most popular places were Fort Robinson State Park (355,000 visitors), Scotts Bluff National Monument (132,166), Arbor Lodge State Historical Park & Museum (100,000), Carhenge (86,598), Stuhr Museum of the Prairie Pioneer (60,002), and Buffalo Bill Ranch State Historical Park (28,446).	0% (baseline)
<b>Concise text</b> with about half the word count as the control condition	In 1996, six of the best-attended attractions in Nebraska were Fort Robinson State Park, Scotts Bluff National Monument, Arbor Lodge State Historical Park & Museum, Carhenge, Stuhr Museum of the Prairie Pioneer, and Buffalo Bill Ranch State Historical Park.	+58%
<b>Scannable layout</b> using the same text as the control condition in a layout that facilitated scanning	<p>Nebraska is filled with internationally recognized attractions that draw large crowds of people every year, without fail. In 1996, some of the most popular places were:</p> <ul style="list-style-type: none"> <li>•Fort Robinson State Park (355,000 visitors)</li> <li>•Scotts Bluff National Monument (132,166)</li> <li>•Arbor Lodge State Historical Park &amp; Museum (100,000)</li> <li>•Carhenge (86,598)</li> <li>•Stuhr Museum of the Prairie Pioneer (60,002)</li> <li>•Buffalo Bill Ranch State Historical Park (28,446).</li> </ul>	+47%
<b>Objective language</b> using neutral rather than subjective, boastful, or exaggerated language (otherwise the same as the control condition)	Nebraska has several attractions. In 1996, some of the most-visited places were Fort Robinson State Park (355,000 visitors), Scotts Bluff National Monument (132,166), Arbor Lodge State Historical Park & Museum (100,000), Carhenge (86,598), Stuhr Museum of the Prairie Pioneer (60,002), and Buffalo Bill Ranch State Historical Park (28,446).	+27%
<b>Combined version</b> using all three improvements in writing style together: concise, scannable, and objective	<p>In 1996, six of the most-visited places in Nebraska were:</p> <ul style="list-style-type: none"> <li>•Fort Robinson State Park</li> <li>•Scotts Bluff National Monument</li> <li>•Arbor Lodge State Historical Park &amp; Museum</li> <li>•Carhenge</li> <li>•Stuhr Museum of the Prairie Pioneer</li> <li>•Buffalo Bill Ranch State Historical Park</li> </ul>	+124%

# Best Locations to Put Content

- Above the fold
  - Prioritize, do not cram
- Where people expect
  - Where other pages put similar content
  - **Not** where the ads usually go
- Users will scroll down if the first content is interesting

# Banner Blindness

- The brain learns to avoid uninteresting content
- Banners and Advertisements are recognized subconsciously (by their appearance) and are never considered
  - Ads also “poison” adjacent elements
- Lesson learned: never create a message / title / warning / etc. that might look like an ad. (Faux ads)



# References and Acknowledgment

- Scott MacKenzie: Human-Computer Interaction - An Empirical Research Perspective, Morgan Kaufmann
  - Chapter 3: Interaction Elements
- Ben Shneiderman, Catherine Plaisant, Maxine S. Cohen, Steven M. Jacobs, and Niklas Elmquist, Designing the User Interface: Strategies for Effective Human-Computer Interaction
  - Chapter 8: Fluid Navigation
- COGS120/CSE170: Human-Computer Interaction Design, videos by Scott Klemmer,  
[https://www.youtube.com/playlist?list=PLLssT5z\\_DsK\\_nuSHL\\_Mjt87THSTIgrsyJ](https://www.youtube.com/playlist?list=PLLssT5z_DsK_nuSHL_Mjt87THSTIgrsyJ)
- Most of the slides are adapted from those used in the "Human Computer Interaction" course of Politecnico di Torino
  - <http://bit.ly/polito-hci>



# License

- These slides are distributed under a Creative Commons license “**Attribution-NonCommercial-ShareAlike 4.0 International (CC BY-NC-SA 4.0)**”
- **You are free to:**
  - **Share** — copy and redistribute the material in any medium or format
  - **Adapt** — remix, transform, and build upon the material
  - The licensor cannot revoke these freedoms as long as you follow the license terms.
- **Under the following terms:**
  - **Attribution** — You must give appropriate credit, provide a link to the license, and indicate if changes were made. You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use.
  - **NonCommercial** — You may not use the material for commercial purposes.
  - **ShareAlike** — If you remix, transform, or build upon the material, you must distribute your contributions under the same license as the original.
  - **No additional restrictions** — You may not apply legal terms or technological measures that legally restrict others from doing anything the license permits.
- <https://creativecommons.org/licenses/by-nc-sa/4.0/>