



HCI
2022

Visual Design and Fluid Navigation

Human Computer Interaction

Luigi De Russis

Academic Year 2022/2023

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 ...

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.

Layout

Colors

Alignment

BASIC VISUAL DESIGN

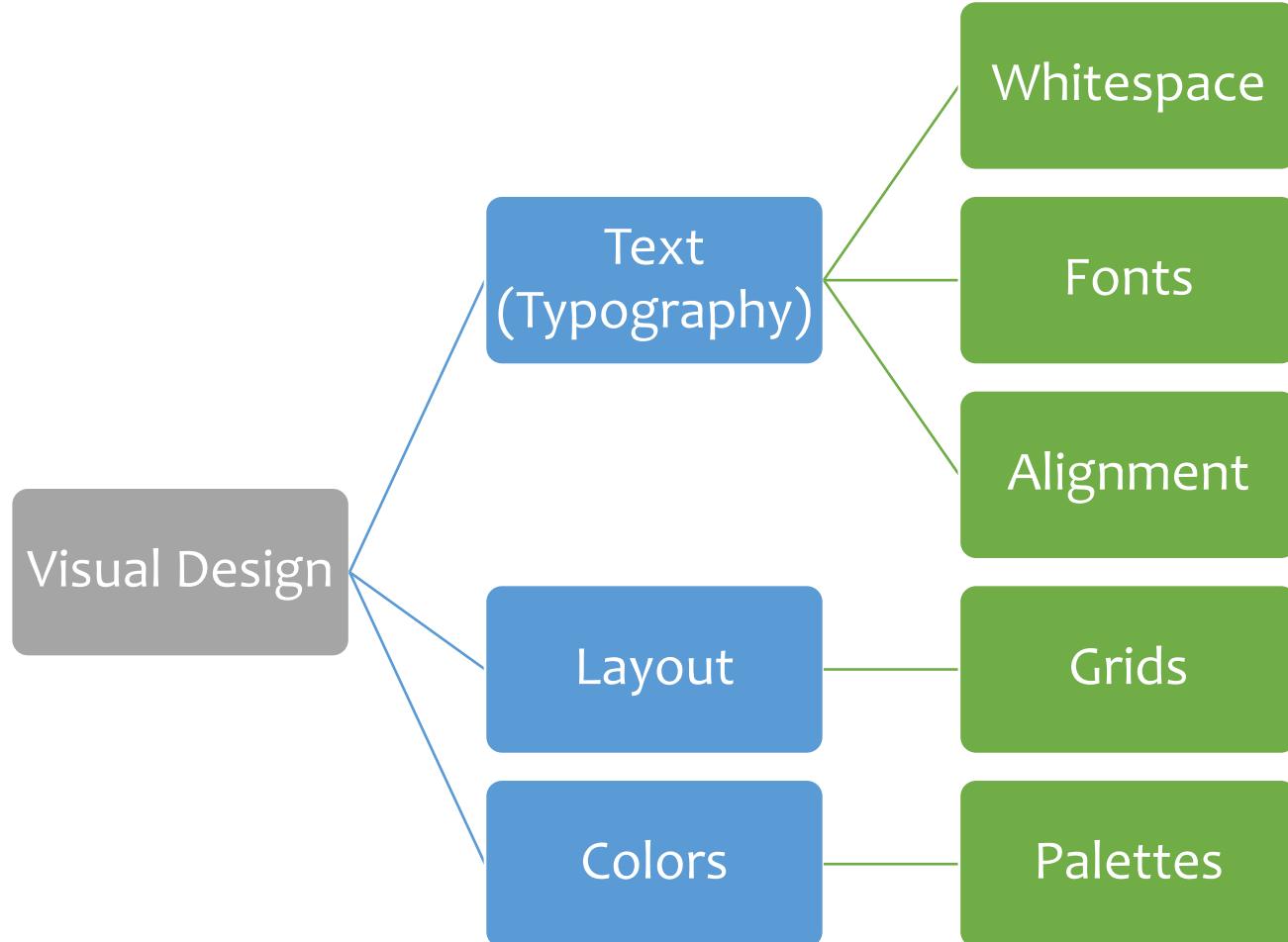
Text

- **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



'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

ANALYSIS

Manchin issues warning to Democrats on Biden's economic package

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

News and buzz

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

Featured



UNIVERSAL HISTORY ARCHIVE/GETTY IMAGES

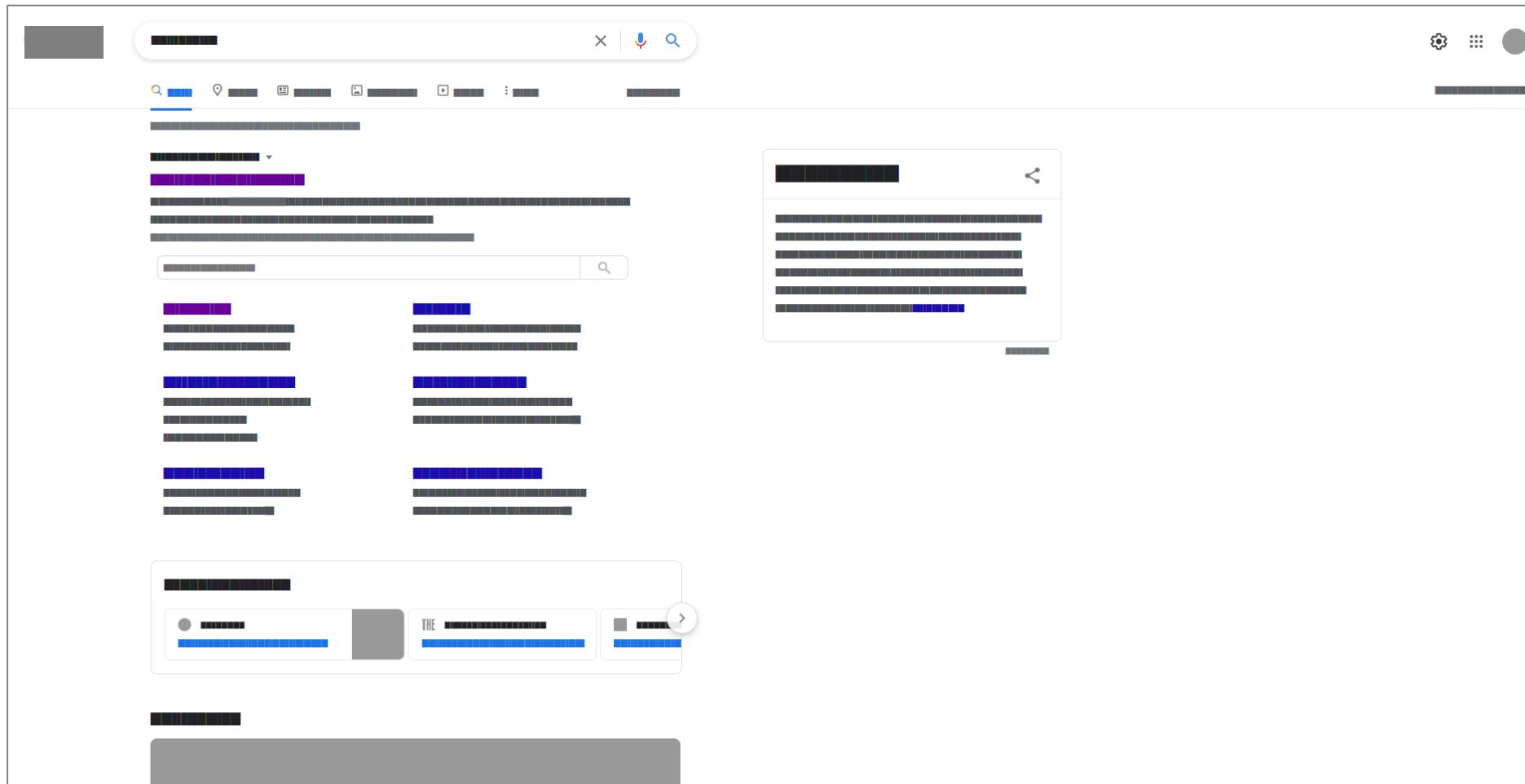
Spotlight

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

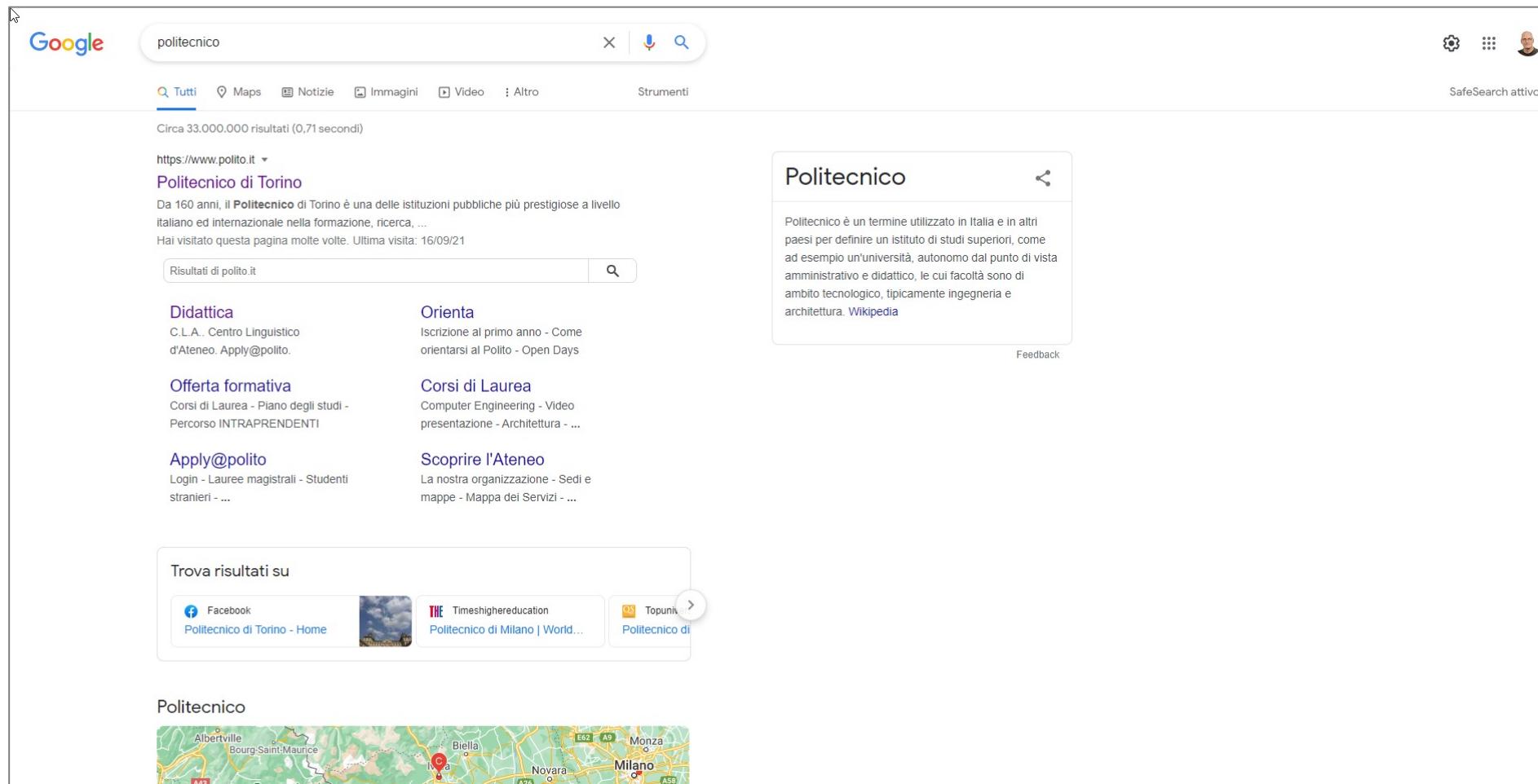
Could Covid-19 vaccines impair a child's future fertility? Officials say no.

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. The left sidebar includes links for Home, PUBLIC Questions (selected), Tags, Users, COLLECTIVES, Explore Collectives, FIND A JOB, Jobs, Companies, and TEAMS. The main content area displays a list of 'All Questions' with 21,855,928 entries. Each question card includes the title, a brief description, the number of votes and answers, tags, and the user who asked it. To the right of the main content are several sidebar panels: '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 'Go Language' with 13k members, 'Google Cloud' with 11k members, and 'GitLab' with 3k members), and 'Related Tags' (listing 'javascript' (2290823), 'python' (1824472), 'java' (1808306), and 'sql' (1524673)).

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 a "Scrivi una recensione" button. Below the navigation is a map of New York City with a "Guarda la mappa" button. The main title "Hotel New York City e alloggi" is centered above a search form for "Arrivo" (Arrival) and "Partenza" (Departure), and a guest count "Ospiti" (Guests) set to "1 camera, 2 adulti, 0 bambini". A sidebar on the left includes 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 "Colazione inclusa" and "5 stelle"). The main content area displays a list of 911 hotel structures in New York City, ordered by quality-price. The first result is the "Fairfield Inn & Suites New York Midtown Manhattan/Penn Station", which is sponsored. It shows a photo of the hotel building, its price of 161€, and a "Vedi l'offerta" button. To the right, there's a summary of hotel features: "Info sull'hotel" (Visit the hotel's site, 00 1212-563-0900, Offer Special), "1.865 recensioni" (1.865 reviews), and icons for Wi-Fi, Bar/Lounge, Centro fitness, and Sicurezza.

Recognizable Page Structure

TBS Newsi Tokyo Broadcasting System, News Portal Site

リアルタイム経営こそ、IT戦略 FUTURE[®] Architect
経営とITをデザインする、フューチャーアーキテクト。

News10 アラフト元議長の骨からゾロニウム検出。暗黙の可能性高まる 11/07 04:20 RSS/RDF配信 文字サイズ 中 大

社会 政治 経済 國際 スポーツ 列島 天気 連続動画 報道コラム ニュース検索 検索

注目キーワード 【メニュー表示問題】[みずほ暴力团説立]原発[米盗賊疑惑]

最終更新:2013年11月7日(木) 04時34分

NEW「三越伊勢丹」も不適切表示、他の百貨店にも拡大

ステップワゴン スズメ! 家族の冒険プロジェクト
ニッポン 家族冒険スポット
総選挙!
ドンドン投票してね!
HONDA

TBSニュース番組ダイジェスト配信

TBSニュースパートNER NEWS 23 NR3 JNN

台風情報 Smart News 地震情報 JNN 福島第一原発情報カメラ

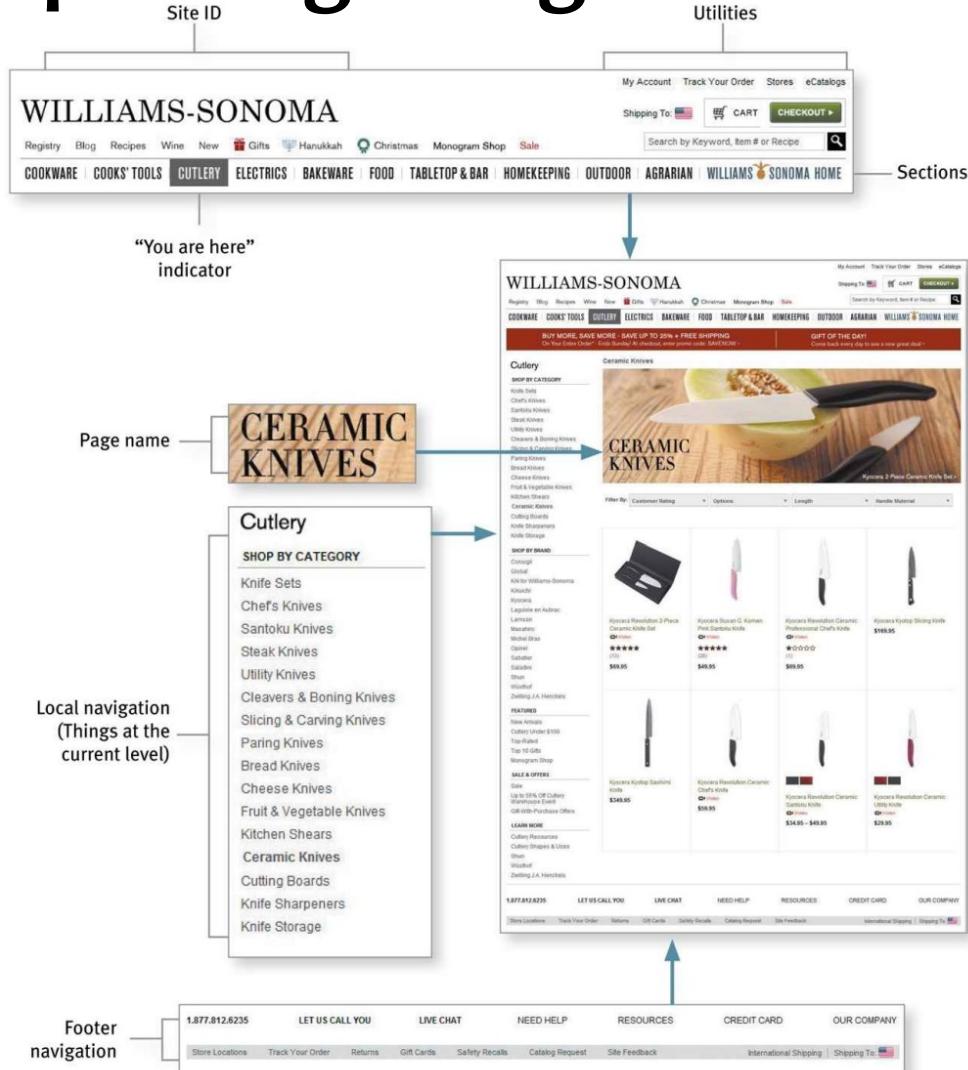
NEW 日本人初の船長・若田さん、きょう宇宙へ
NEW 「特定秘密保護法案」きょうから国会審議
NEW 豪猪木議員、金正恩氏の従兄人・張成沢氏と会談
NEW 山西省連続爆発事件、共産党本部狙った計画的犯行か

社会 政治 経済

■ 来ネット販売、23品目“3年間安全調査後”解禁へ
■ 福島第一原発4号機を公開、燃料取り出しへ高いハードル
■ 「もんじゅ」で核物質管理に不備、原子力機関に厳重注意
■ 温室効果ガスの平均濃度、過去最高値記録
■ カルガモから鳥インフル、北海道で今シーズン初
■ 一軒 食材偽装を認める、「三笠」運営会社の社長辞任へ
■ 安曇楽牧場「和牛丼」法、闇漁会社などを提訴へ
■ 表示適正化方策、消費者庁が業界3団体に要請文
■ 「崖」など芸能人の偽サイン板売、容疑の親子らを3人逮捕
■ 大阪・川に少年突き落とし、遺体は下着姿
■ 歌舞伎町のホスト変死、何者かが暴行か
■ 小学校の4階から小6男児転落、意識不明の重体

関連リンク ニュース | TBS25 | 最速判決 | リクナビnet | 時事新報 | 新選組 | ニュースカード | グローバルナビ | フロント | ビジネスクリック | TBS TOPページ | TBS報道番組一覧 | JNN各局

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



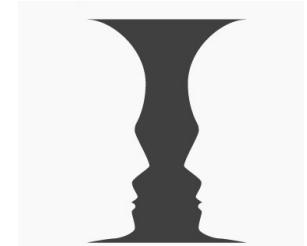
<https://www.interaction-design.org/literature/topics/gestalt-principles>

<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



Basecamp 3

Version 3 is all new for 2016!

Working with other people? Struggling to keep everyone on the same page?

DID WE GET THAT DONE YET?
WHEN IS THIS DUE?
NO ONE TOLD ME THAT!
WAIT, WHO MADE THAT DECISION?
WHERE DO I PUT THAT?
WHO SENT THIS TO THE CLIENT?
THIS IS EXHAUSTING!

Sign up now for free below
Just last week, 10,772 companies got started with Basecamp 3!
Sign up using Google
Or, sign up with your email
Your Name: Julie Appleseed
Your Email: julie@widgetco.com
Company/Organization: Widget, Co.

SYNDICATES STARTUPS FUNDS STARTUP JOBS RECRUITING MORE ▾

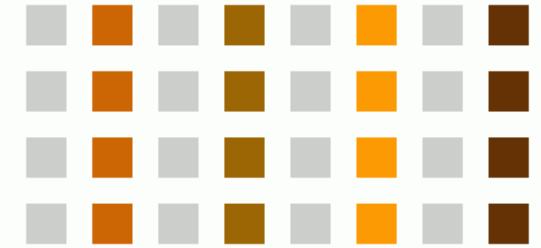
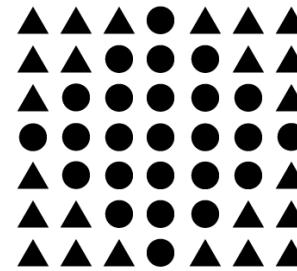
SEARCH Join Log In

Find a Startup Job Post a Job Raise Money Online Invest in Startups

AngelList

Where the world meets startups

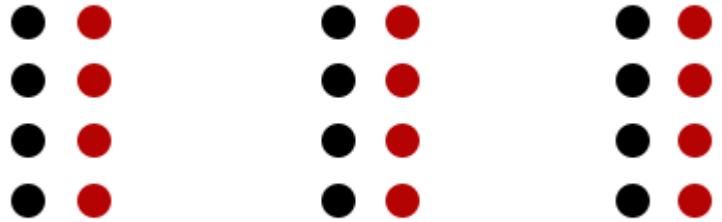
Examples: Similarity



The GitHub sign-up page features a dark background with various software-related icons. At the top, there's a search bar and navigation links for Explore, Features, Enterprise, Pricing, Sign up (highlighted in green), and Sign in. Below the header, a large heading says "Where software is built" with the subtext: "Powerful collaboration, code review, and code management for open source and private projects. Public projects are always free. Private plans start at \$7/mo." A "Sign up for GitHub" button is prominently displayed. To the right, there are fields for "Pick a username", "Your email", and "Create a password", along with a note about character requirements and a "Sign up for GitHub" button. A small terms of service link is also visible.

The LA STAMPA news website has a light-colored header with the logo "LA STAMPA" and links for GNN, NEWSLETTER, and social media. It includes a search icon and links for ABONNATI and ACCEDI. The main content area shows several news articles with images and titles. One article features a video thumbnail of a man speaking. Another article discusses ArcelorMittal's departure from Taranto. There are also sections for "Intervista - Calenda", "Il surriscaldamento climatico", and "SECONDO NOI". The footer contains a circular icon with the number 25.

Examples: Proximity



Save big in every department

- Electronics
- Home
- Exercise & Fitness
- Health
- Clothing & Jewelry
- Furniture
- Cold Weather Prep
- TurboTax ✓
H&R BLOCK
Jackson Hewitt
- Auto & Tires
- Office Supplies
- Home Improvement
- Outdoor Sports

VICE

WATCH SECTIONS PHOTOS MAGAZINE TOPICS: CITY GUIDES ELECTION 2016 OPINION MORE NEWS

Feb 24, 2016 NEWS **Medical Marijuana Users in Canada Can Legally Grow Their Own Weed Now** Manisha Krishnan

Feb 24, 2016 NEWS **The Women Who Love Ted Cruz** Joah Androsky

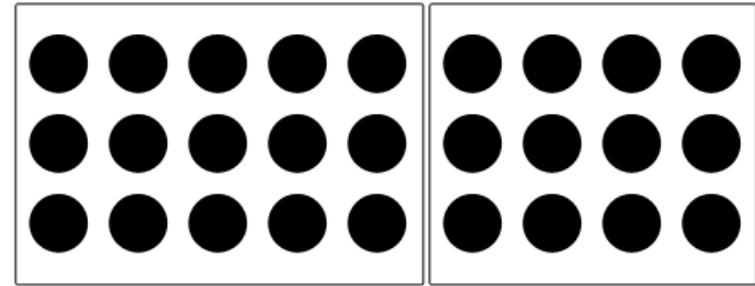
Feb 24, 2016 NEWS **How Donald Trump Won Nevada's Cliven Bundy Vote** Grace Wyler

Feb 24, 2016 STUFF **MOTHERBOARD**



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

Examples: Common Region



P architecture

Grotto Sauna by Parisa, Toronto
[Future Architecture; futuristicnews.co...]
86 409 183 53

Maple
handmade real wood macbook skin covers shipping worldwide from usa
fb 316 189 85

Promoted by artis goods

Von Plataforma Arquitectura
Namai Spa / MIA Design Studio
Me encanta la idea de jardín de este Spa. Parece que las plantas fueran.
139 35

Ayelen Cayarga
promenade

Fontanny w ogrodzie - wedne inspiracje
Pinterest: XYeazySIX #architecture #design #projects #Mundo das Casas www.mundodascasas...
fb 1113 193 86

Sophie Crouch
architecture

Houzz Yesterday at 5:30am ·

11 Things You Didn't Think You Could Fit Into a Small Bedroom
<http://bit.ly/21k8Nvl>

11 Things You Didn't Think You Could Fit Into a Small Bedroom

Clever designers have found ways to fit storage, murals and even chandeliers into these tight sleeping spaces

WWW.HOUZZ.COM

Like Comment Share

157

Top Comments ▾

33 shares

Frankie Sez Really great ideas for the 'minimalist' in some of us...
Like · Reply · 1 Like · 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 horizontal scrollable list of five books. Each book entry includes the title, author, a small thumbnail image, a brief description, and purchase links.

- CROSSING THE CHASM** by Geoffrey A. Moore
- THE LEAN STARTUP** by Eric Ries
- THE INNOVATOR'S DILEMMA** by Clayton M. Christensen
- THE INNOVATOR'S SOLUTION** by Clayton M. Christensen
- HOW WILL YOU MEASURE YOUR LIFE?** by Clayton M. Christensen

Each book entry includes a star rating, number of reviews, and price information.

Page 1 of 20



Step 1

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



Step 2

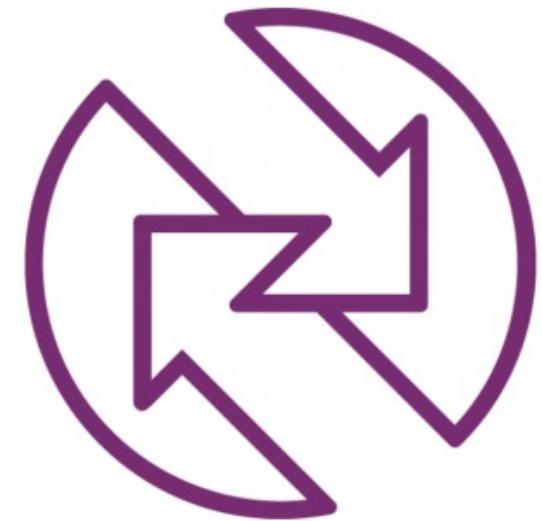
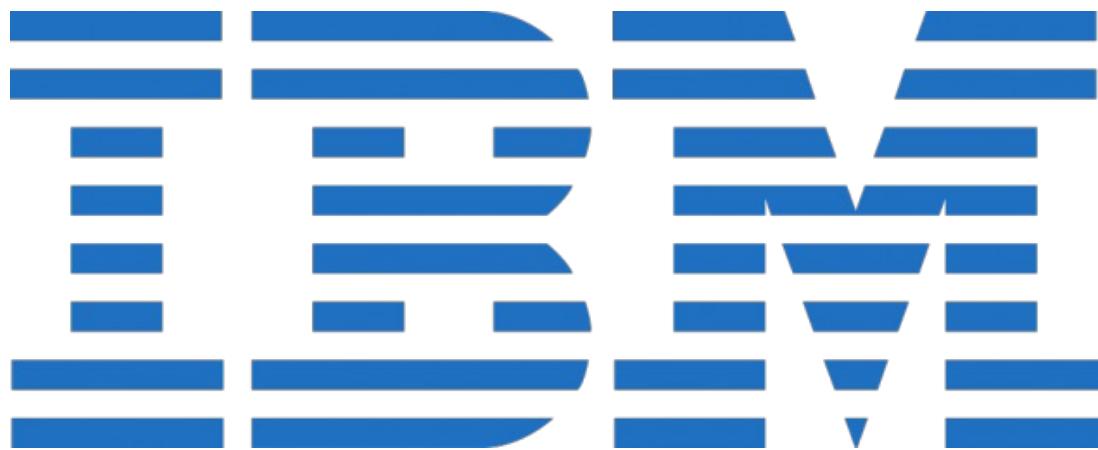
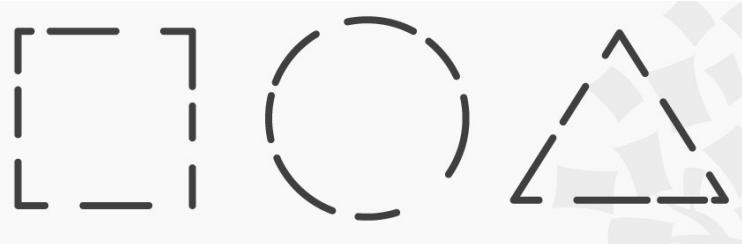
Our friendly servers organize your food for delivery - hot and ready to eat!



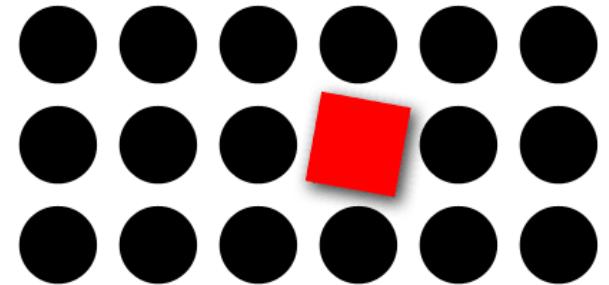
Step 3

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

Examples: Closure



Examples: Focal Point



The Twilio website homepage features a dark background image of a crowded street. 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, the main headline reads "BUILD APPS THAT COMMUNICATE WITH EVERYONE IN THE WORLD". A sub-headline below it 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".

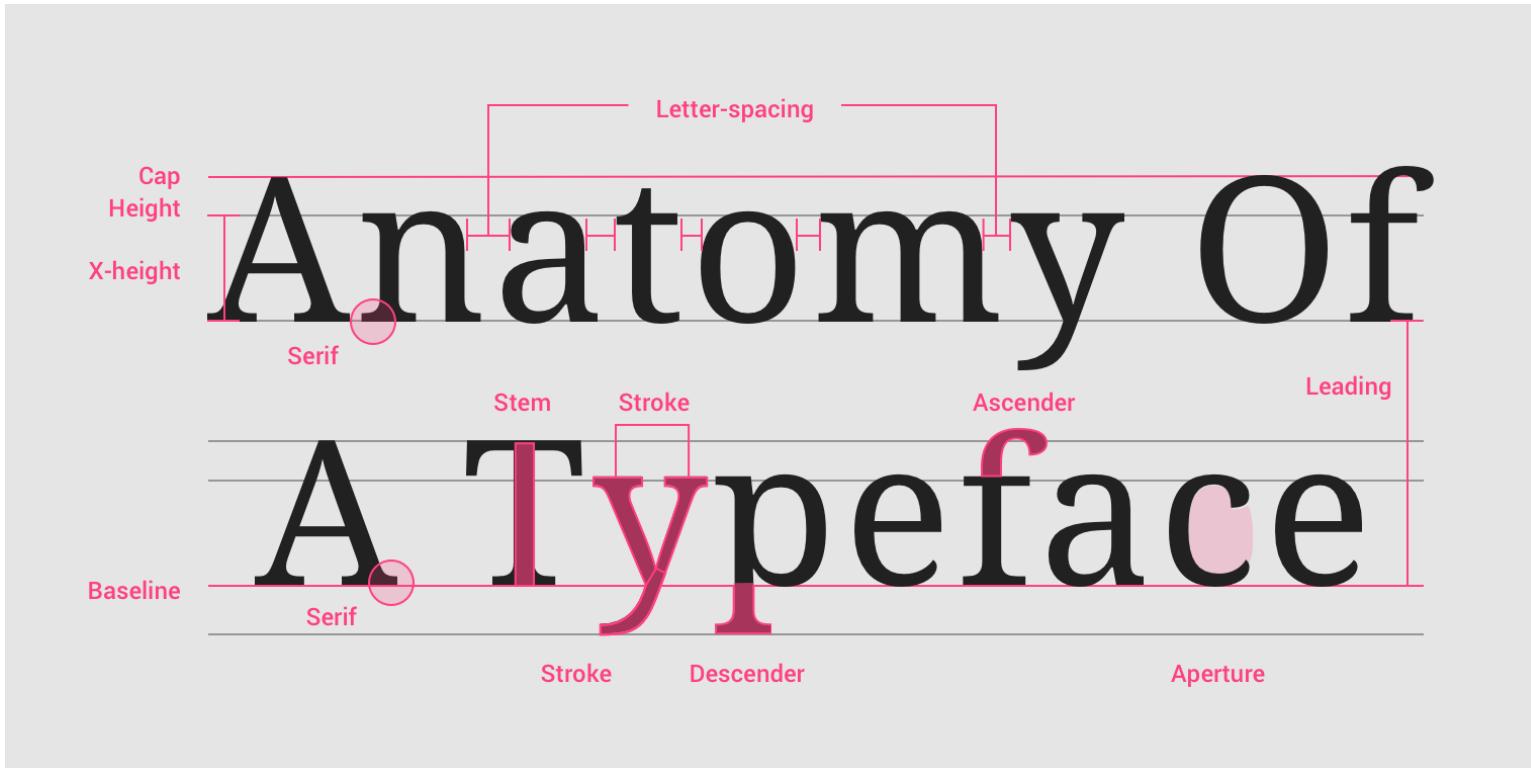
The Instacart website homepage is overlaid on a photograph of a person holding a brown paper grocery bag filled with various items like a sandwich, chips, and vegetables. The Instacart logo is at the top of the overlay. Below it, the text "Groceries delivered in 1 hour" and "Enter your zip code to see your local stores" is displayed, along with a "Enter Zip Code" input field and a green "Find Stores >" button. At the bottom of the overlay, there is 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

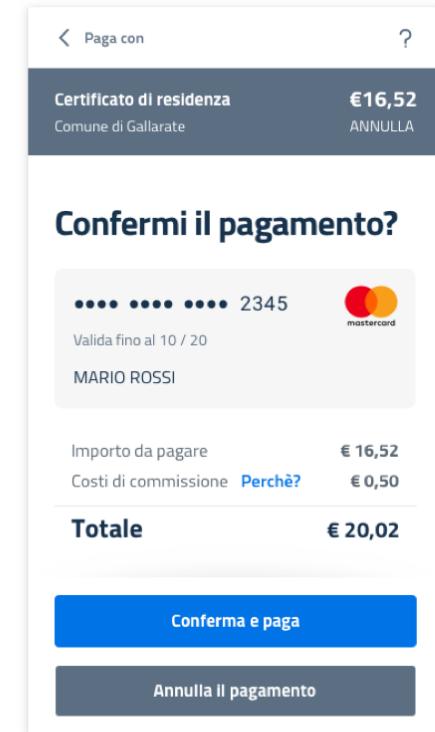
Reusable categories of text, each with an intended application and meaning

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

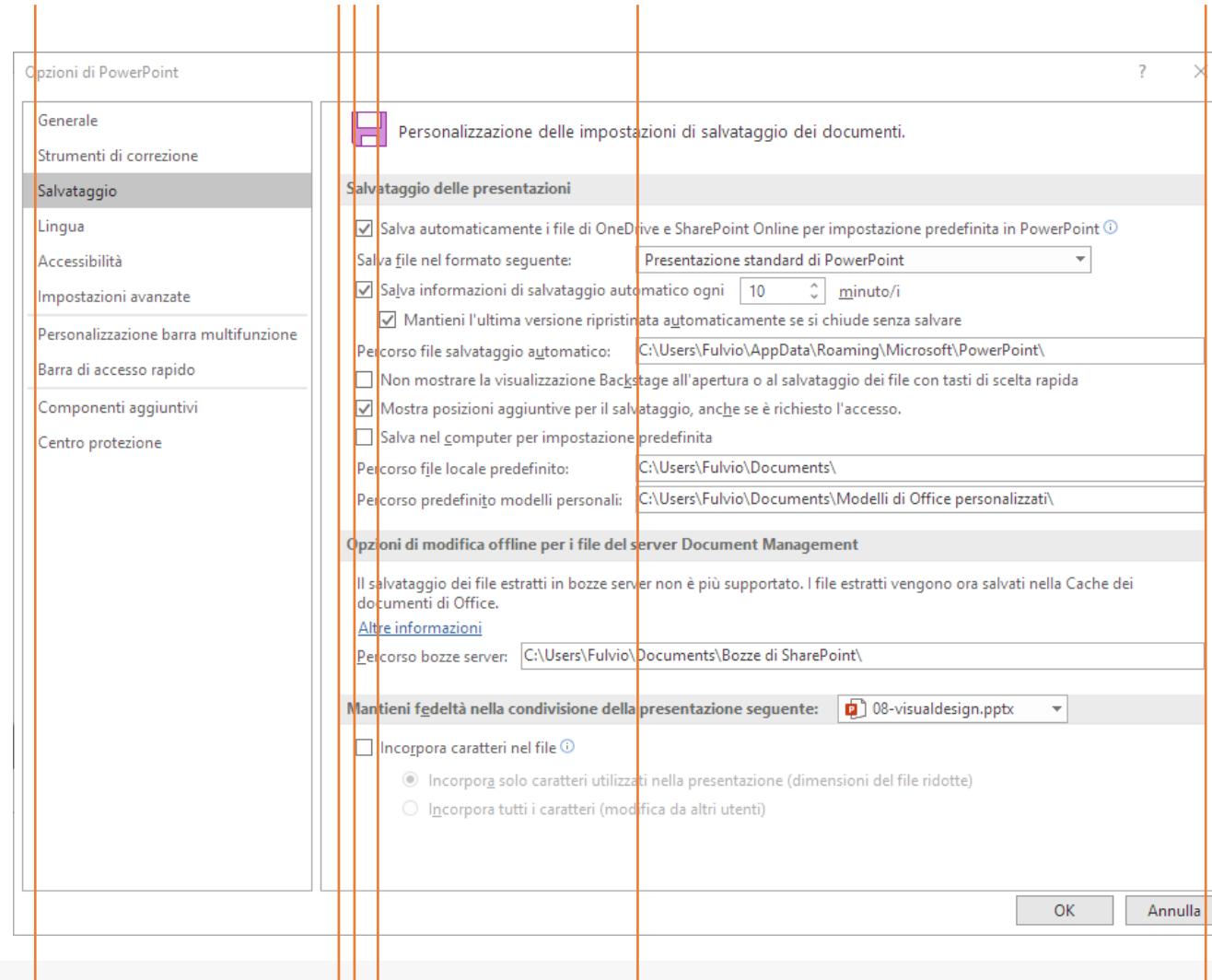
Grids and Alignment

Exploiting grouping and alignment to convey content, at different levels

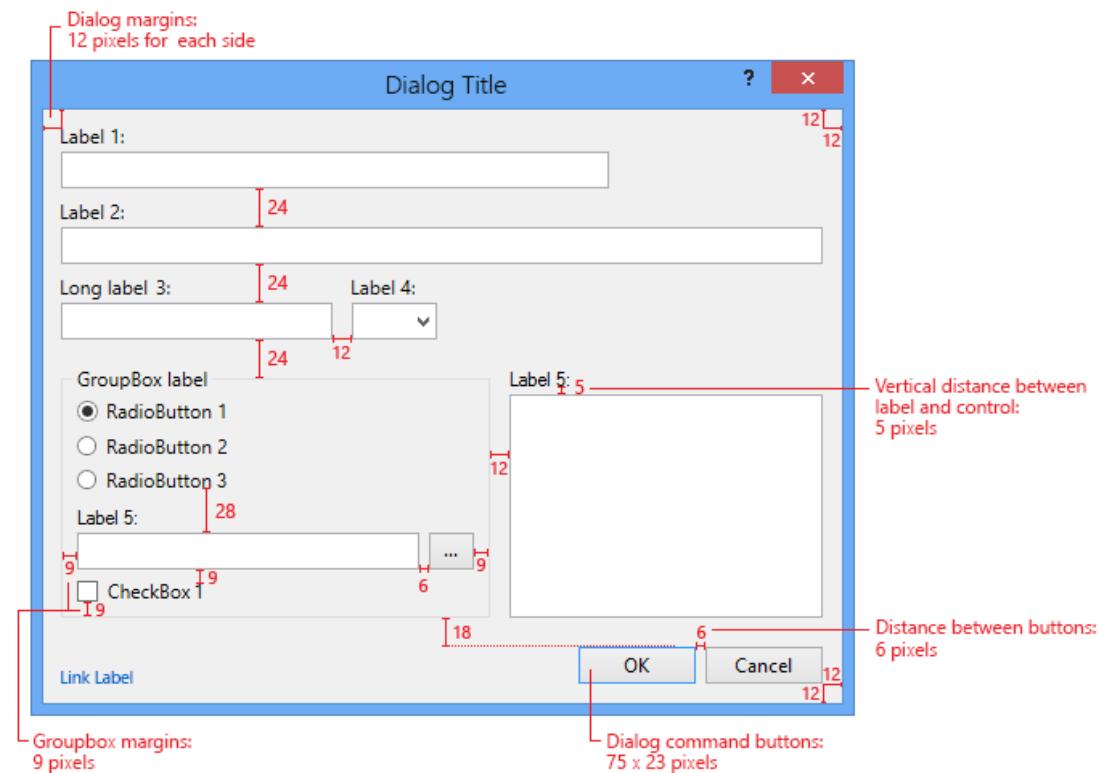
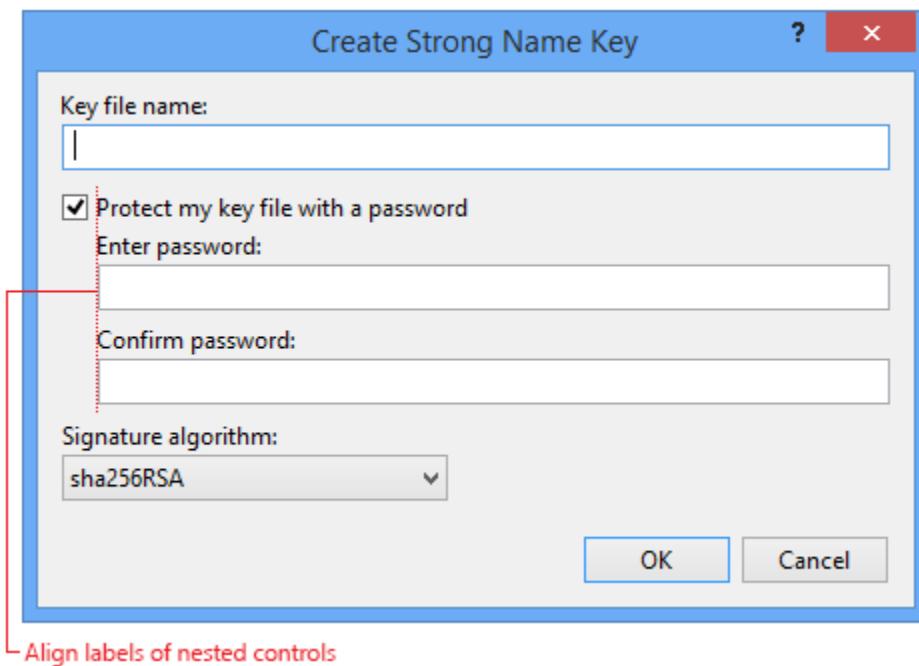
Alignment

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

Example

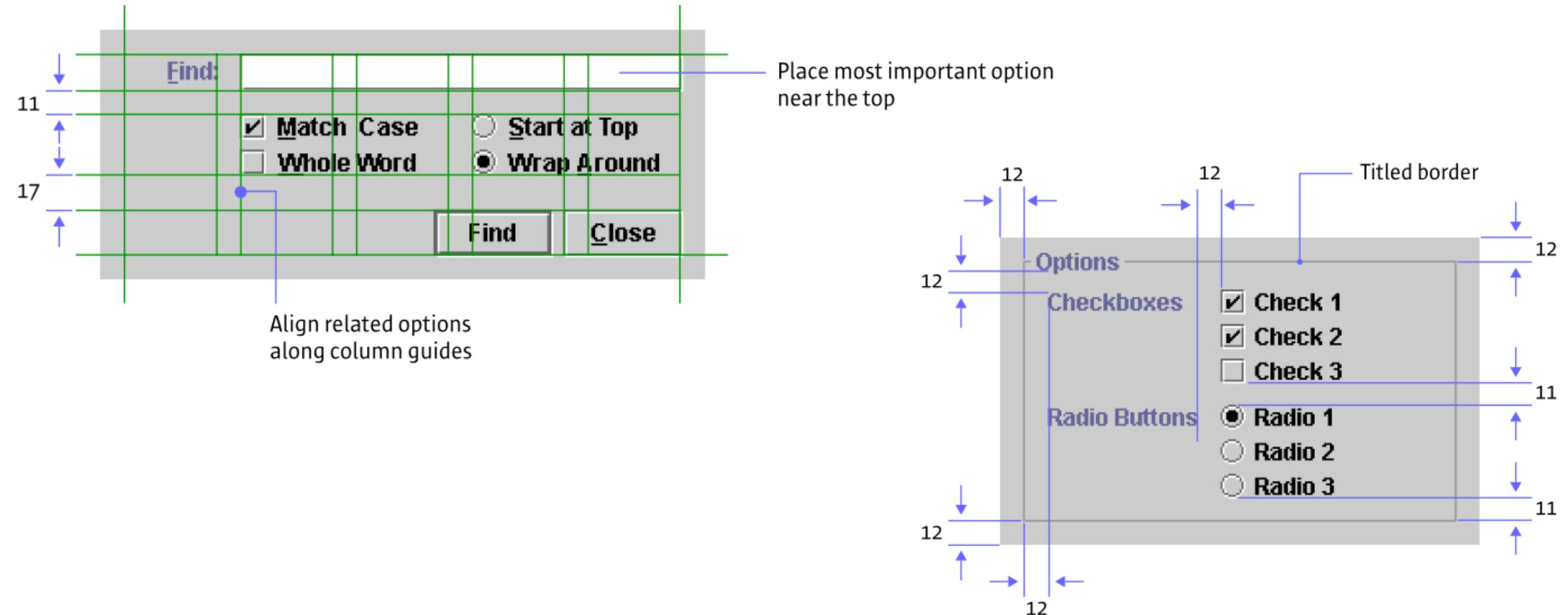


Examples



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

Examples

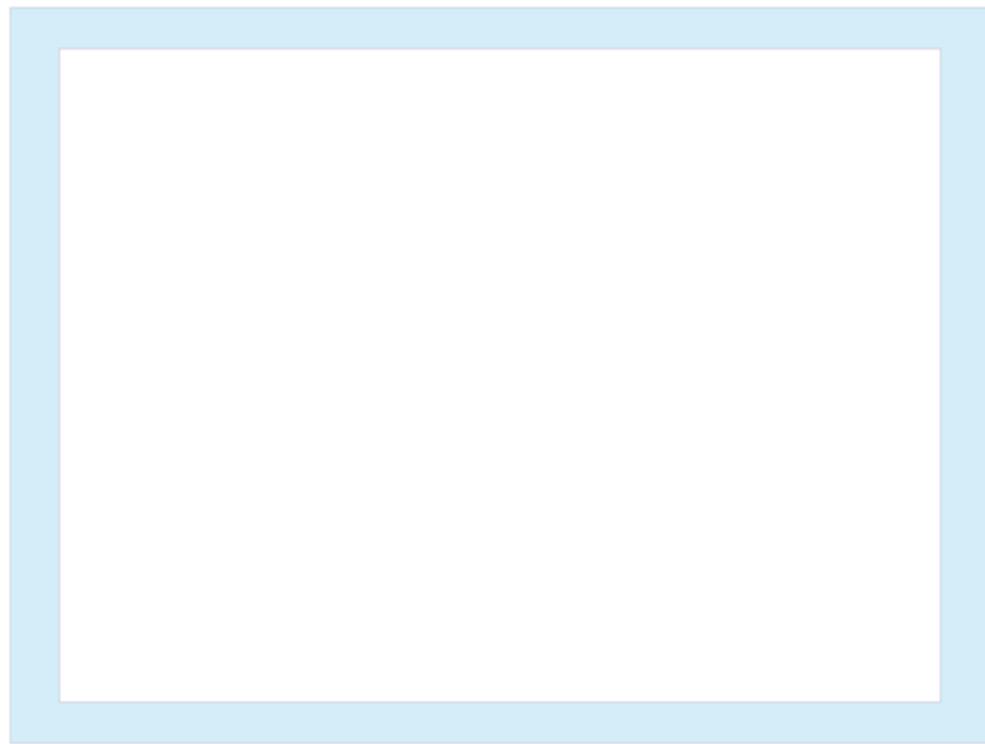


Grid Layout Ingredients

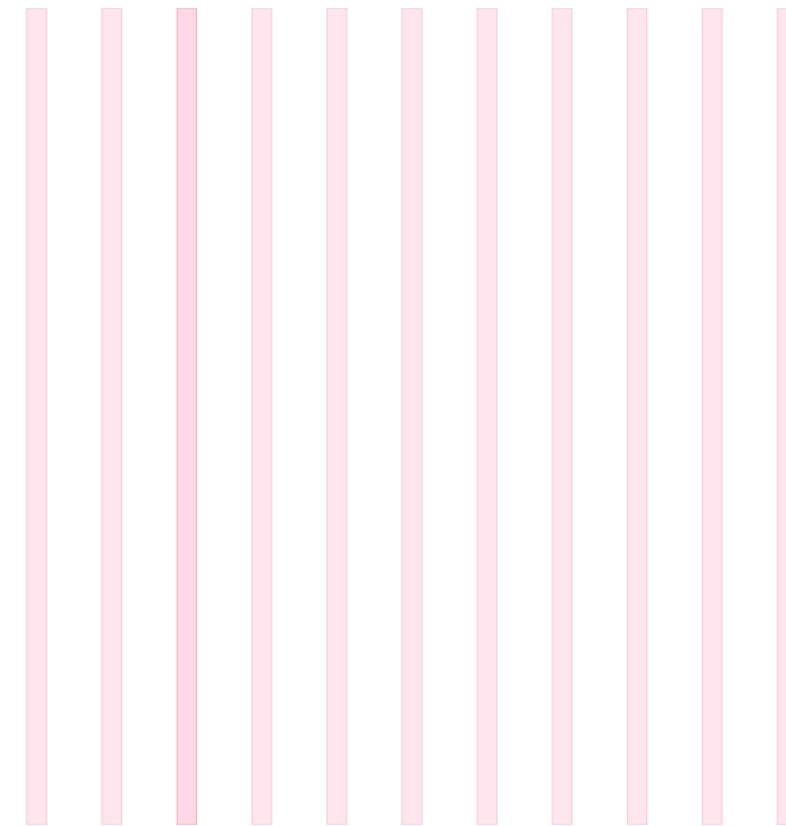
- **Guides:** The edge which you choose to align content with
- **Column:** A vertical division of content
- **Row:** A horizontal division of content
- **Margins:** The area surrounding your content
- **Gutters:** The margins between columns
- **Hang-line:** A horizontal guide to align content to hang 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

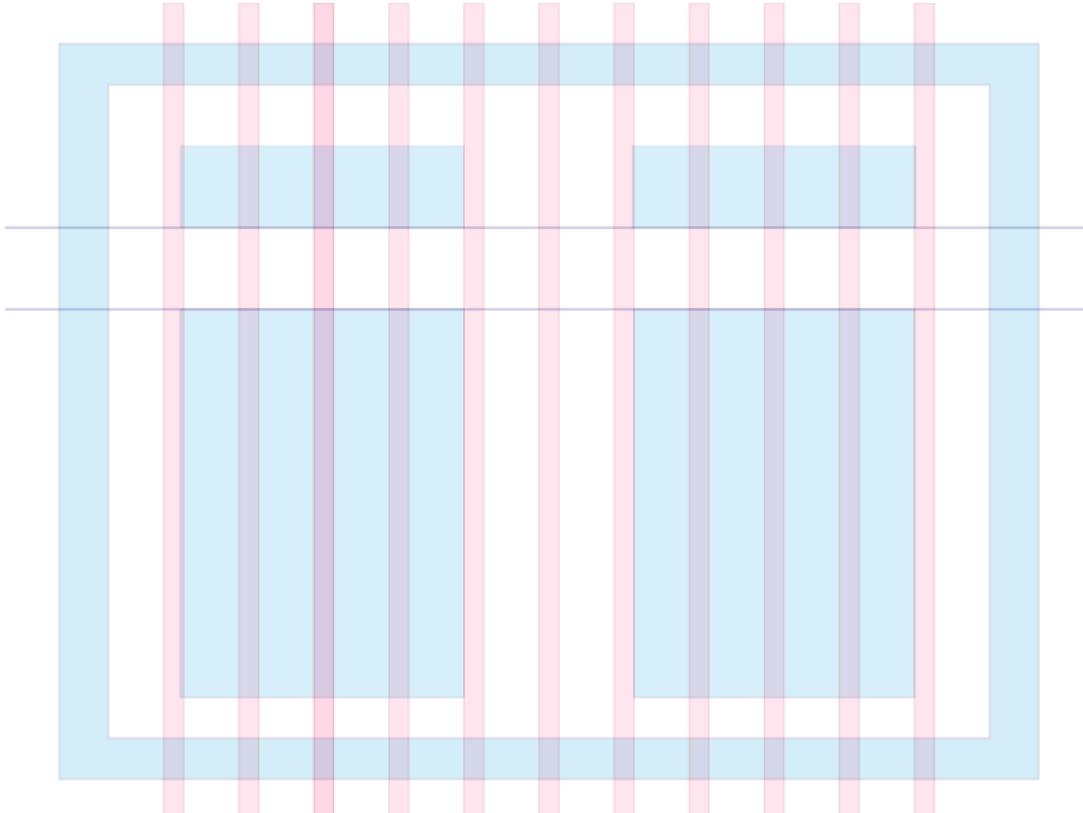


Columns & Gutters



Grid Layout Ingredients

Hanglines and Baselines

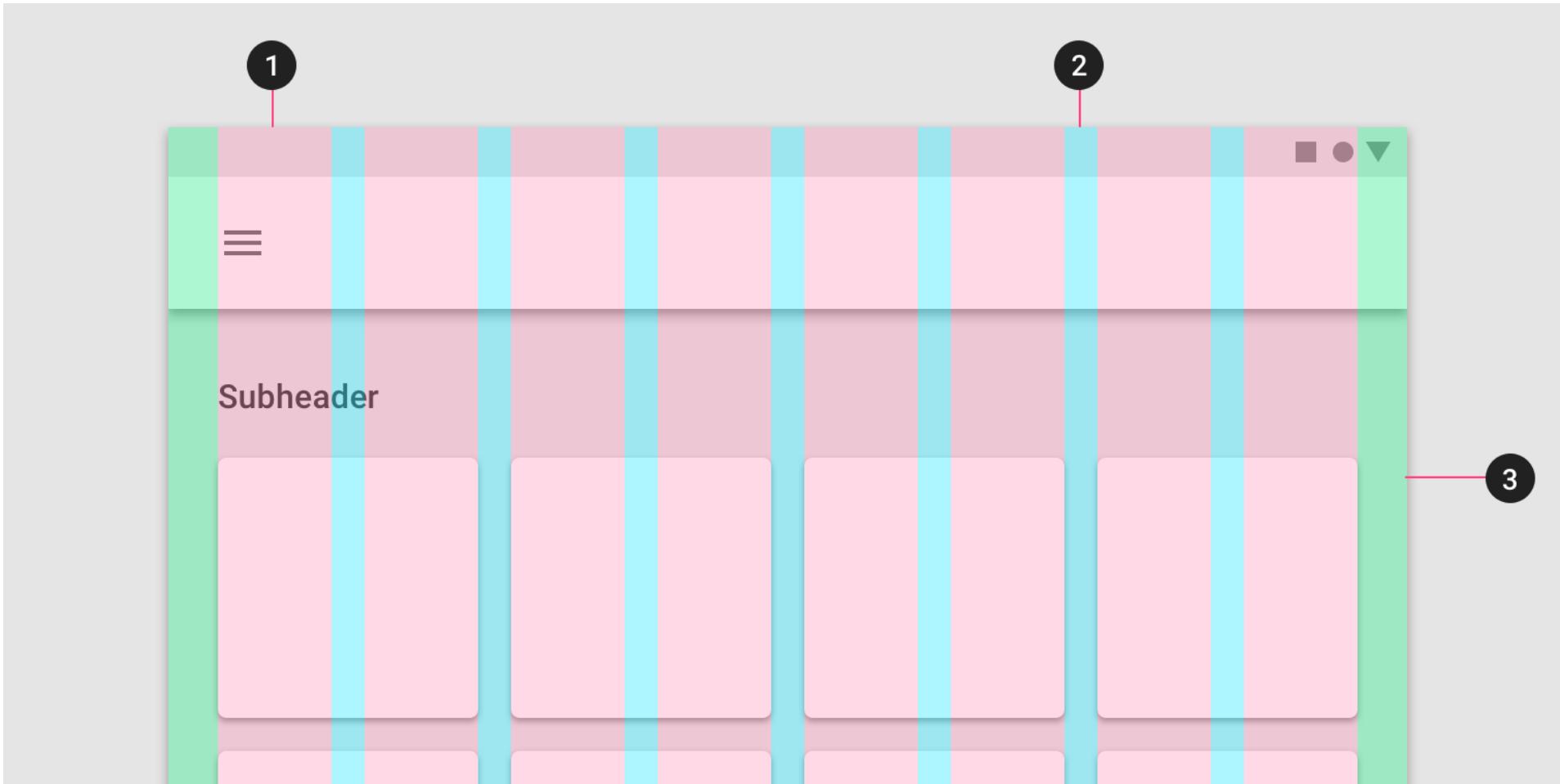


Baseline Grids



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)

span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1				
span 4				span 4				span 4							
span 4				span 8											
span 6						span 6									
span 12															

Responsive Grid Layout

The image shows four screenshots of a website's homepage, illustrating a responsive grid layout. The layout consists of a main content area and a footer. The main content area features a hero section with a title and a 'Get started today' button. Below this are several columns of content, each with a title, a brief description, and a 'Learn More' button. The columns are arranged in a grid that adapts to different screen sizes. The footer contains copyright information and links to terms of use and privacy policy.

```
<div class="row">
  <div class="col-md-6 col-lg-4 col-xl-3">
    <h2>HTML</h2>
    <p>...</p>
    <p><a href="..." class="btn btn-success">...</a></p>
  </div>
```

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

Other Grid Systems

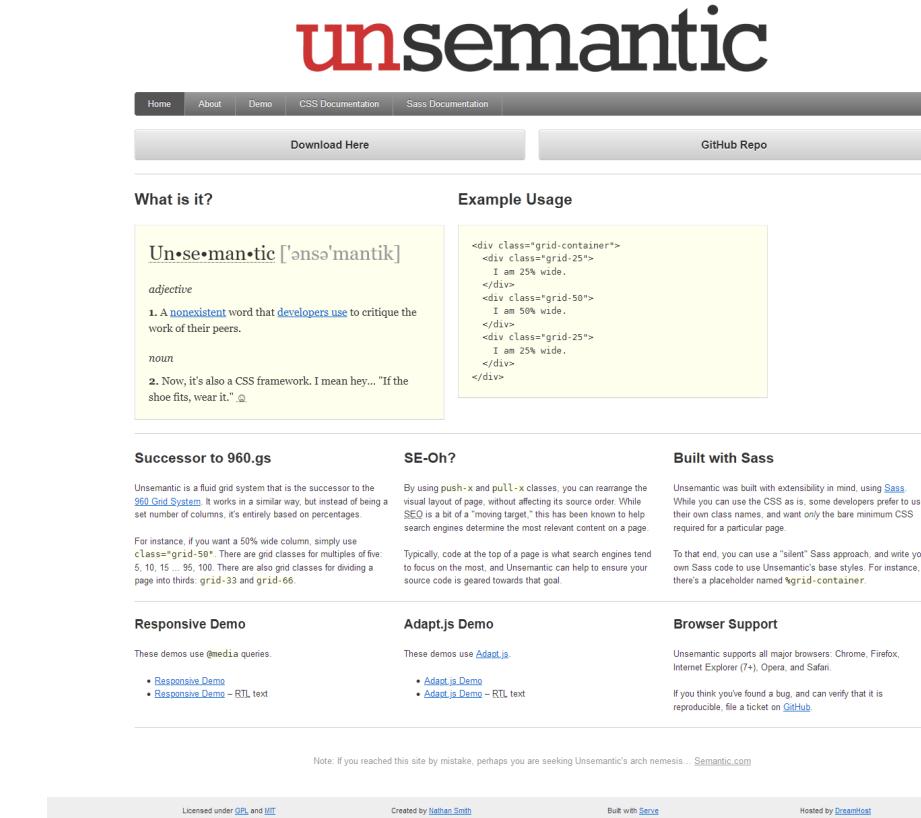
960 grid (fixed width, 12 or 16 col)



The screenshot shows the homepage of the 960 Grid System. At the top, there's a navigation bar with links for Home, About, Demo, CSS Documentation, and Sass Documentation. Below the navigation is a large "Big ol' DOWNLOAD button :)" with several arrows pointing right and left. Underneath the button are two main sections: "changelog" and "INTERVIEW ABOUT 960.gs", and "VIEW SLIDES ABOUT THE 960 GRID SYSTEM". Further down are buttons for "ADAPT.JS – ADAPTIVE CSS", "CUSTOM CSS GENERATOR", and "GRID OVERLAY BOOKMARK". The main content area is divided into three columns: "Essence", "Dimensions", and "Purpose". The "Dimensions" section explains the 12-column grid (width: 960px) and the 16-column grid (width: 960px). It also mentions the 10px gutters between columns and the 5px buffer on each side of the container. The "Purpose" section discusses the system's suitability for rapid prototyping and its integration into a production environment. Below these are sections for "More Columns" and "Source Order", which explain how the grid can be rearranged using CSS classes like push and pull. At the bottom, there are examples of websites using the 960 grid, including Sony Music and Drupal.

<https://960.gs/>

Unsemantic (responsive, based on %)



The screenshot shows the homepage of the Unsemantic website. The header features the word "unsemantic" in a large, lowercase, sans-serif font. Below the header is a navigation bar with links for Home, About, Demo, CSS Documentation, and Sass Documentation. There are also "Download Here" and "GitHub Repo" buttons. The main content area is divided into two main sections: "What is it?" and "Example Usage". The "What is it?" section defines "Un•se•man•tic" as an adjective and provides a definition of the term "nemesis". The "Example Usage" section shows a snippet of CSS code for a fluid grid container with 12 columns (grid-25%, grid-50%, grid-25%, grid-25%). Below these sections are "Successor to 960.gs", "SE-Oh?", "Built with Sass", "Responsive Demo", "Adapt.js Demo", and "Browser Support" sections. The "Successor to 960.gs" section compares Unsemantic to the 960 Grid System. The "SE-Oh?" section discusses SEO optimization. The "Built with Sass" section explains how Unsemantic uses Sass. The "Responsive Demo" and "Adapt.js Demo" sections show examples of responsive design. The "Browser Support" section states that Unsemantic supports all major browsers. At the bottom, there's a note about the site being a mistake for Unsemantic's arch nemesis, a link to the GitHub repository, and footer links for license, author, build, and host.

<https://unsemantic.com/>

Grid Structure

Main body:
Mix of 2x and 3x
columns

Alternating row
types



Title area outside the grid

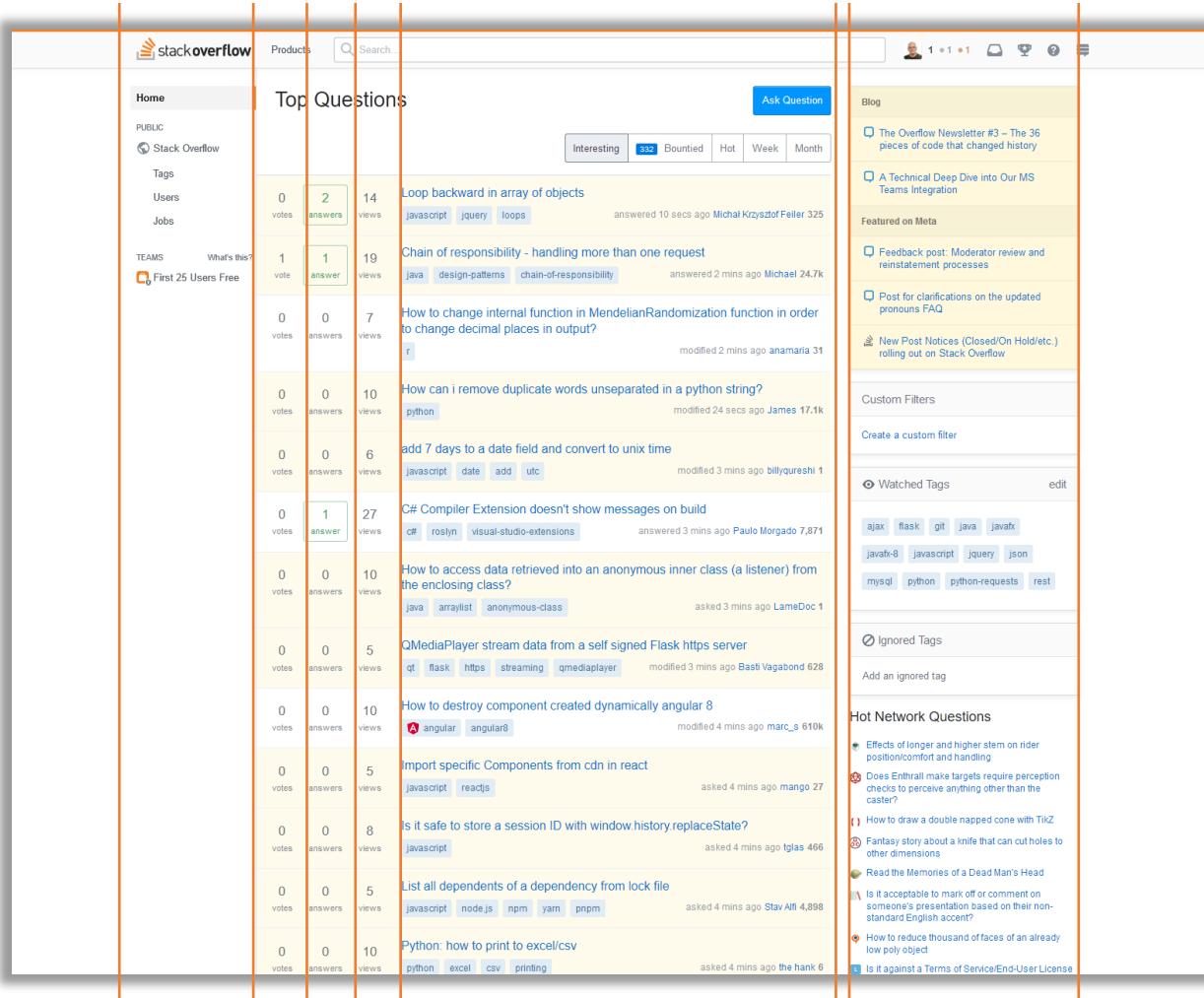
Right column for other types of articles

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	01PDW0V	GB	Information systems	ING-INF/05 (6)		6	M. Morisio	View	
1	02GOLOV	IT	Architetture dei sistemi di elaborazione	ING-INF/05 (10)		10	P. Bernardi E. Sanchez Sanchez	View	
				Ottobre					
1	02LSEOV	GB	Computer architectures	ING-INF/05 (10)		10	P. Montuschi	View	
1	01SQJOV	GB	Data Science and Database Technology	ING-INF/05 (6)		8	S. Chiusano	View	
				Ottobre					
1	01SQMOV	IT	Data Science e Tecnologie per le Basi di Dati	ING-INF/05 (8)		8	E. Baralis	View	
1	01OTW0V	GB	Computer network technologies and services	ING-INF/05 (6)		6	M. Baldi	View	
				Ottobre					
1	02KPNOV	IT	Tecnologie e servizi di rete	ING-INF/05 (6)		6	G. Marchetto	View	
2	02JEUOV	GB	Formal languages and compilers	ING-INF/05 (6)		6	R. Sisto	View	
				Ottobre					
2	05BIDOV	IT	Ingegneria del software	ING-INF/05 (8)		8	G. Bruno	View	
				Ottobre					
2	04GSPOV	GB	Software engineering	ING-INF/05 (8)		8	M. Morisio	View	
2	01UDFOV	IT	Applicazioni Web I	ING-INF/05 (6)		6	E. Masala	View	
				Ottobre					
2	01TXYOV	GB	Web Applications I	ING-INF/05 (6)		6	F. Cormo	View	
2	02GRSOV	IT	Programmazione di sistemi	ING-INF/05 (10)		10	G. Cabodi	View	
				Ottobre					
2	01NYH0V	GB	System and device programming	ING-INF/05 (10)		10	S. Quer	View	
2° anno		Periodo	Codice	Lingua	Insegnamento	Crediti	Docente	Note	Vincoli
1	01TYMOV	GB	Insegnamento a scelta 1	Information systems security	ING-INF/05 (6)	6		View	
				Ottobre					
1	01UDUOV	IT	Sicurezza dei sistemi informativi	ING-INF/05 (6)		6		View	
1	01SQNOV	GB	Software Engineering II	ING-INF/05 (6)		6		View	
1,2	01TYDOV	GB	Crediti liberi			6			
1,2	29EBHOV		Tesi			30			
2			Insegnamento a scelta 2			6			
Insegnamento a scelta 1									
Periodo	Codice	Lingua		Insegnamento		Crediti	Docente	Note	Vincoli
1	01TYDOV	GB	Cloud Computing	ING-INF/05 (6)		6		View	
1	01PDCOV	GB	Digital control technologies and architectures	ING-INF/04 (6)		6		View	
1	01TXZOV	GB	Distributed systems programming	ING-INF/05 (6)		6		View	Si
1	01NWPOV	IT	Elaborazione dell'audio digitale	ING-INF/05 (6)		6		View	
1	01UDGOV	GB	Energy management for IoT	ING-INF/05 (6)		6		View	Si
1	02JSKOV	GB	Human Computer Interaction	ING-INF/05 (6)		6		View	
1	01SQIOV	GB	Machine Learning and Artificial Intelligence	ING-INF/05 (6)		6		View	
1	01PDXOV	GB	Modern design of control systems	ING-INF/04 (6)		6		View	
1	01OUUV0V	GB	Optimization methods and algorithms	ING-INF/04 (6)		6		View	
1	01ACETOV	IT	MAT/09 (6)			6		View	

Example (same page in 2020)

Software

▼ 1° anno 2020/2021

Periodo	Codice	SSD	Insegnamento	Lingua	Crediti	Docente	Note	Orario
1	01PDW0V	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	01OTW0V	ING-INF/05 (6)	Computer network technologies and services	🇬🇧	6	G. Marchetto (161 iscr.)	🕒	
oppure								
1	02KPN0V	ING-INF/05 (6)	Tecnologie e servizi di rete	🇮🇹	6	G. Marchetto (253 iscr.)	🕒	
2	02JEU0V	ING-INF/05 (6)	Formal languages and compilers	🇬🇧	6	R. Sisto (60 iscr.)	🕒	
2	05BID0V	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	01TXY0V	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	01NYH0V	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	01TYM0V	ING-INF/05 (6)	Information systems security	🇬🇧	6		🕒	
oppure								
1	01UDU0V	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: [Learn more](#)

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

Weekend Delivery:

Security Access Code:
For buildings or gated communities

[Save & Add Payment Method](#)

[Save & Continue](#)

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

[Aggiungi indirizzo](#)

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

BETTY

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

MY BEST SELLING CAR LEASING DEALS!

500 IDEAS!

NICOLE...PAPA!

MEGA-HATCH!

CARS A-Z

ABARTH

124 Spider Convertible
595 Convertible
595 Hatchback
695 Convertible

ALFA ROMEO

Giulia Saloon
Giulietta
Stelvio Estate

AUDI

5.127/mth including VAT
3 year cheap car leasing **9+35**

5.152/mth including VAT
3 year cheap car leasing **6+35**

5.157/mth including VAT
2 year cheap car leasing **6+23**

Car Leasing Online Service Response Times

75 CUSTOMERS IN 'PROPOSAL'

129 CUSTOMERS IN 'ORDER'

0:03 07

0:05 03

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 BARNSLEY, 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**
- Audi A3 Sportback to Chris WYHONDHAM, NR18**

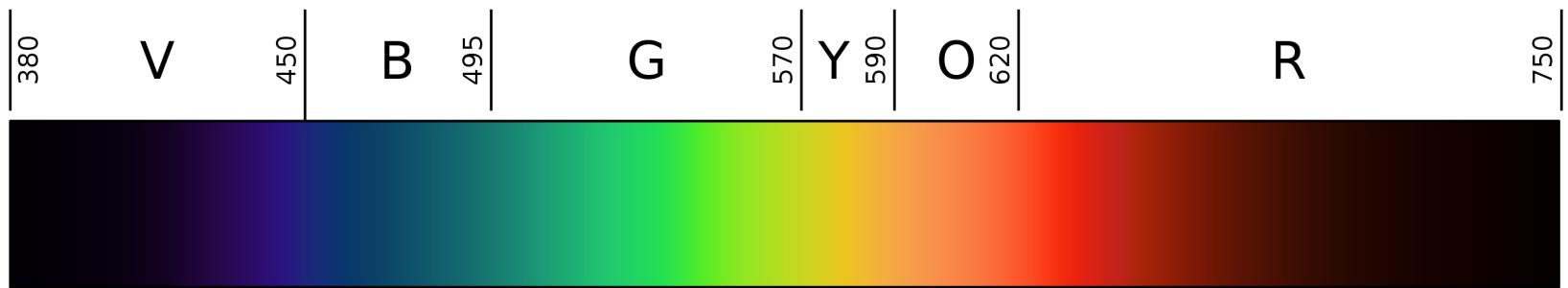
Colors

- 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

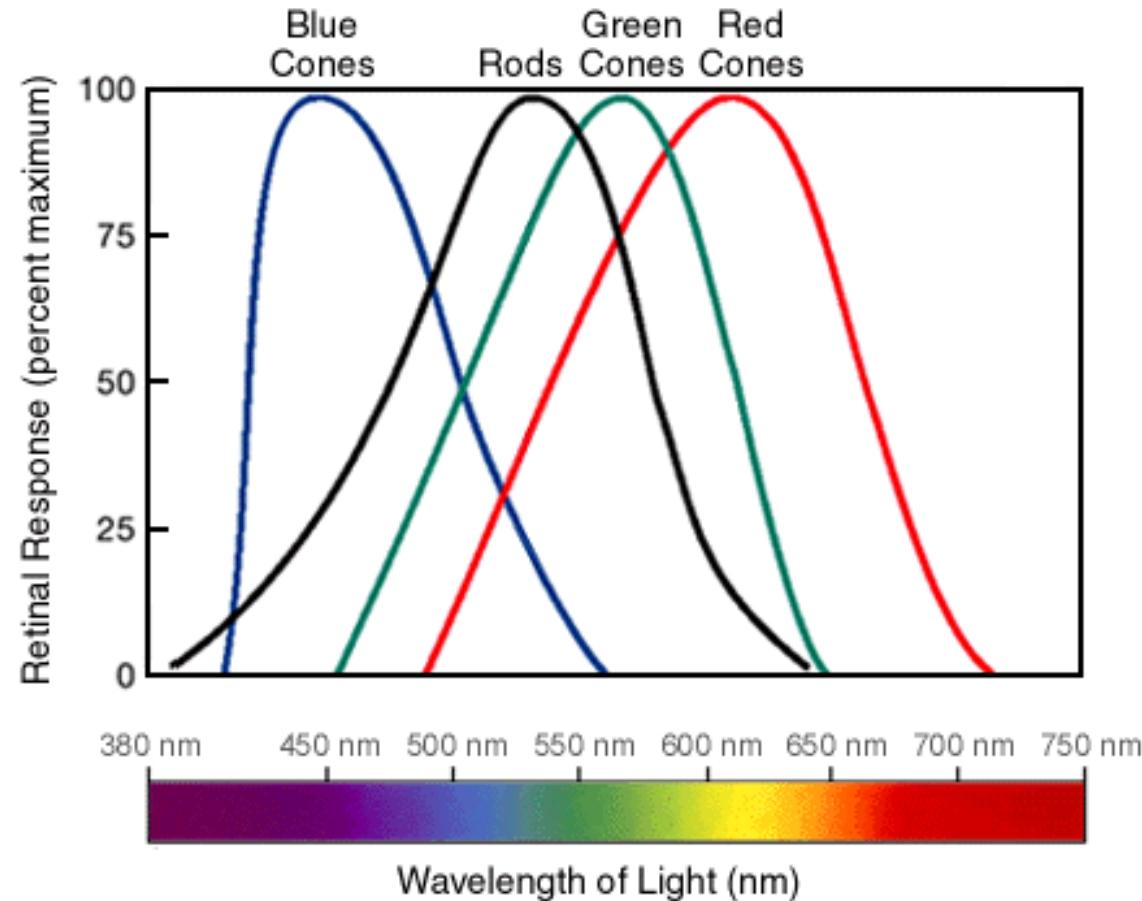


- UV spectrum ends on the left, IR starts on the right
- Wavelengths are in nm
- Source: https://commons.wikimedia.org/wiki/File:Linear_visible_spectrum.svg

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 user interface comparison or a specific feature set.

Left Screenshot (Original UI):

- Top Questions:**
 - Loop backward in array of objects (2 answers, 14 views)
 - Chain of responsibility - handling more than one request (1 answer, 19 views)
 - How to change internal function in MendelianRandomization function in order to change decimal places in output? (0 answers, 7 views)
 - How can I remove duplicate words unseparated in a python string? (0 answers, 10 views)
 - Add 7 days to a date field and convert to unix time (0 answers, 6 views)
 - # Compiler Extension doesn't show messages on build (1 answer, 27 views)
 - How to access data retrieved into an anonymous inner class (a listener) from the enclosing class? (0 answers, 10 views)
 - QMediaPlayer stream data from a self signed Flask https server (0 answers, 5 views)
 - How to destroy component created dynamically angular 8 (0 answers, 10 views)
 - Import specific Components from cdn in react (0 answers, 5 views)
 - Is it safe to store a session ID with window.history.replaceState? (0 answers, 8 views)
 - List all dependents of a dependency from lock file (0 answers, 5 views)
 - Python: how to print to excel/csv (0 answers, 10 views)
- Blog:**
 - The Overflow Newsletter #3 – The 36 pieces of code that changed history
 - A Technical Deep Dive into Our MS Teams Integration
 - Feedback post: Moderator review and reinstatement processes
 - Post for clarifications on the updated pronouns FAQ
 - New Post Notices (Closed/On Hold/etc.) rolling out on Stack Overflow
- Custom Filters:**
 - Create a custom filter
- Watched Tags:**
 - edit
 - ajax flask git java javafx
 - javascript date add utc
 - mysql python python-requests rest
- Ignored Tags:**
 - Add an ignored tag
- Hot Network Questions:**
 - Effects of longer and higher stem on rider position/comfort and handling (0 answers, 10 views)
 - Does Enthral make targets require perception checks to perceive anything other than the caster? (0 answers, 5 views)
 - How to draw a double napped cone with TikZ (0 answers, 8 views)
 - Fantasy story about a knife that can cut holes to other dimensions (0 answers, 5 views)
 - Read the Memories of a Dead Man's Head (0 answers, 10 views)
 - Is it acceptable to mark off or comment on someone's presentation based on their non-standard English accent? (0 answers, 5 views)
 - How to reduce thousand of faces of an already low poly object (0 answers, 10 views)
 - Is it against a Terms of Service/End-User License (0 answers, 6 views)

Example

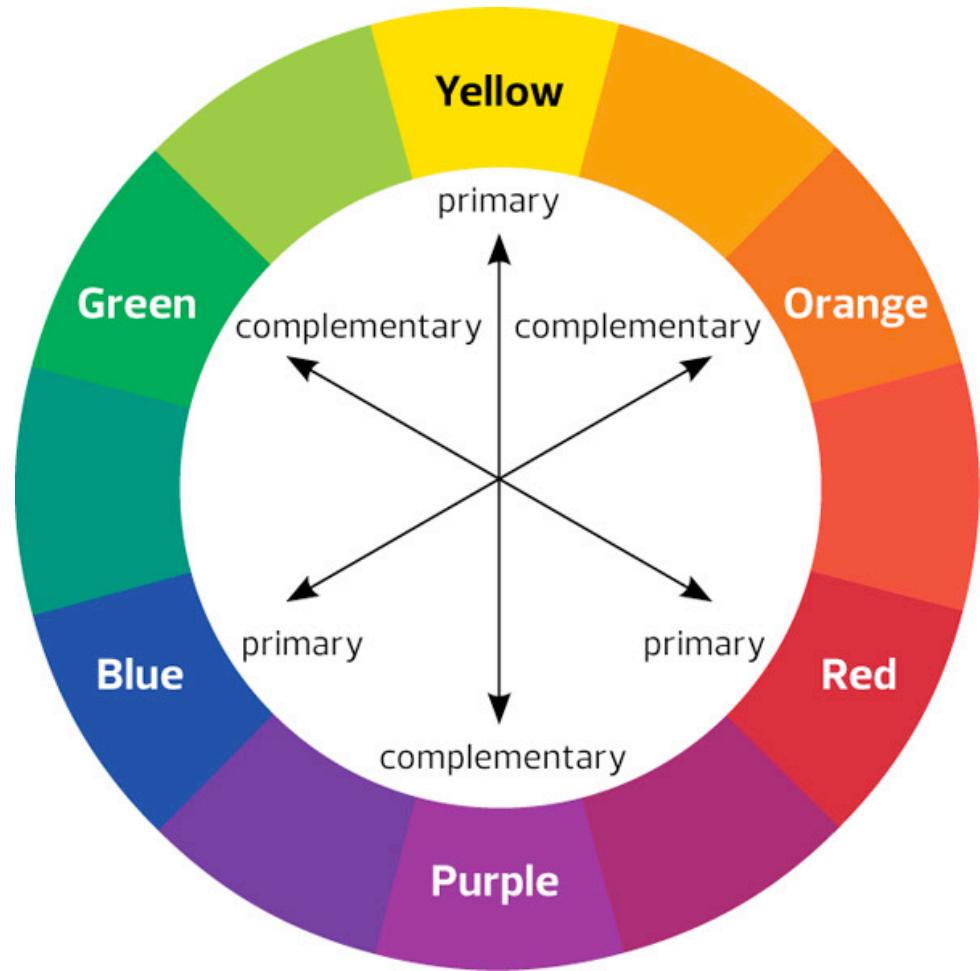
The image displays two side-by-side screenshots of the Politecnico di Torino website, illustrating a design change in the header color scheme.

Left Screenshot (Blue Header): The header is blue, matching the background of the main content area. It features the university's logo, navigation links (Scoprire l'Ateneo, Didattica e Studenti, Il Mondo della Ricerca, Innovazione per le Imprese, Campus Internazionale), and a banner for the 'festival della TECNOLOGIA' (TORINO, 7-10 NOV 2019) with the tagline 'Tecnologia è Umanità'. Below the banner, there is a section titled 'È online il programma del Festival della Tecnologia' with event details and a sidebar for 'AVVISI E SCADENZE'.

Right Screenshot (Black Header): The header is black, creating a high-contrast look. The main content area is outlined by a dashed orange border. The layout is identical to the left screenshot, featuring the university's logo, navigation links, the festival banner, and the 'È online il programma del Festival della Tecnologia' section.

The Color Weel

- 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/>



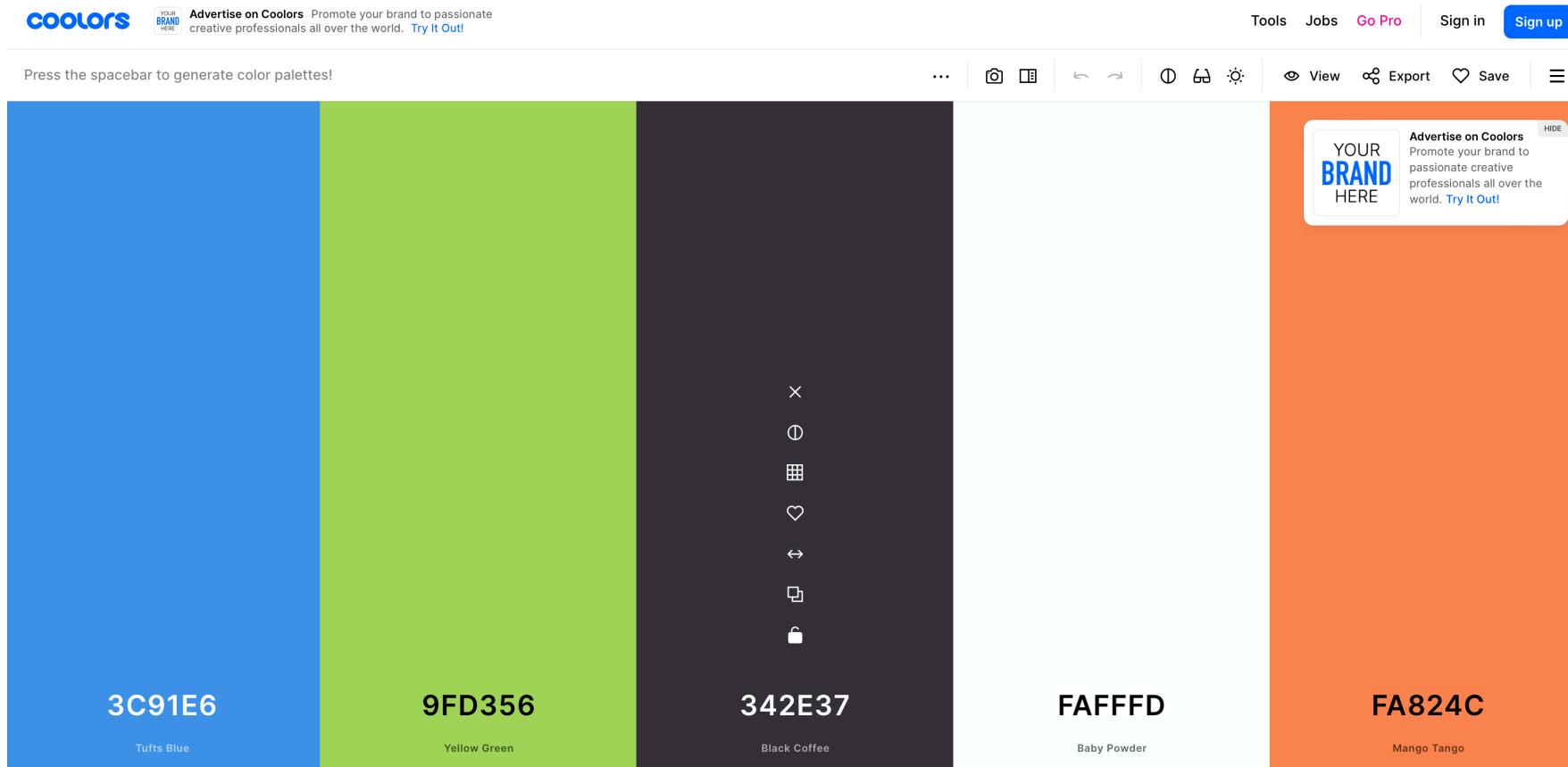
Palettes - PoliTo

GERARCHIA COLORI



https://www.politocomunica.polito.it/en/corporate_image/brand_and_visual_identity

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!

ColdenHuesinBlue 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

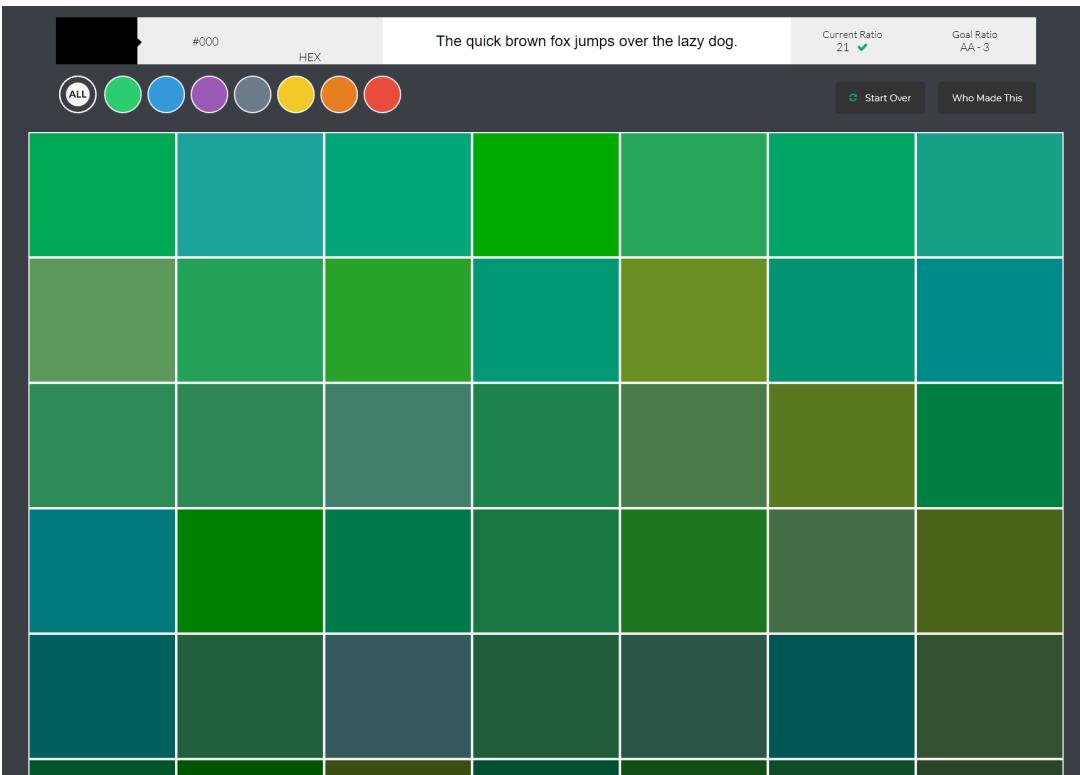
Colors, Human Growth Hormones, and Creativity 0 Comments

PALETTES Create + PATTERNS Create + COLORS Create +

Nineteen by Júlia Freire 0 garden palette 2 by macarver 0 PodCasting by 3sisters 0 light gray purple by macarver 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

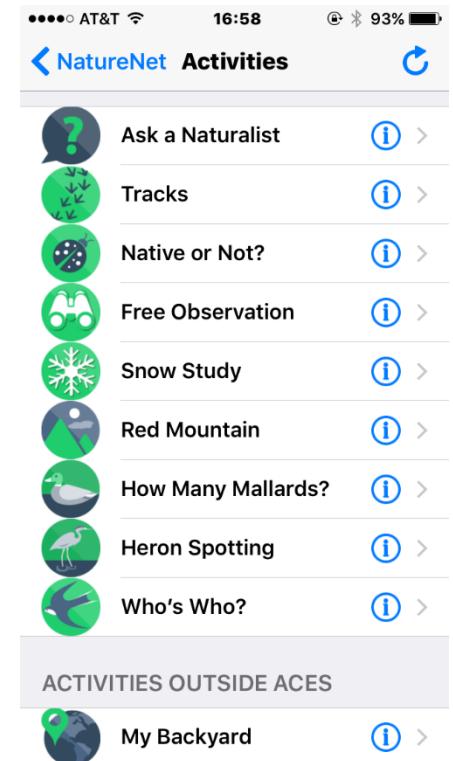
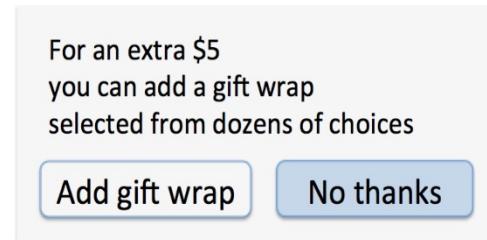
«Informavores» must quickly find the information they need

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

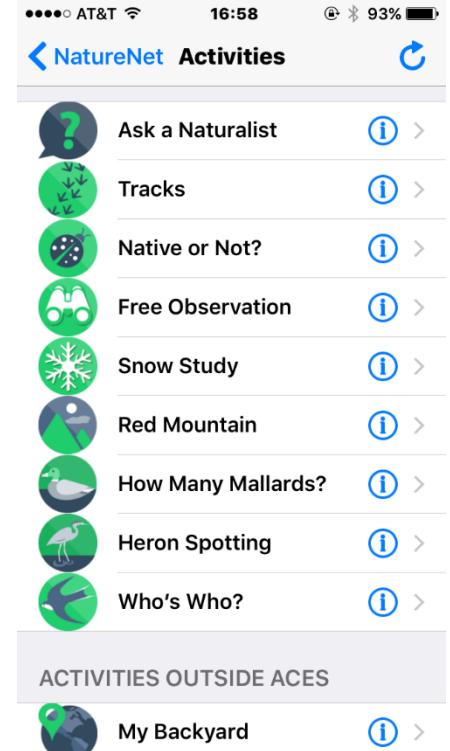
- Menu bars, pop-up menus, toolbars, palettes and ribbons
- Shortcuts and gestures for rapid interaction
- Long lists
- Linear versus simultaneous presentation



Navigation By Selection

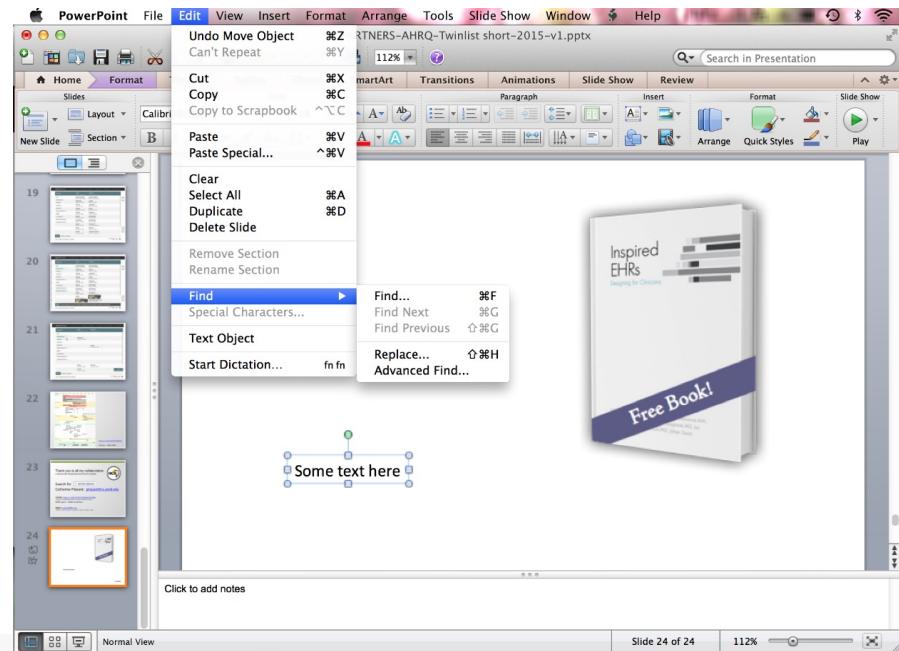
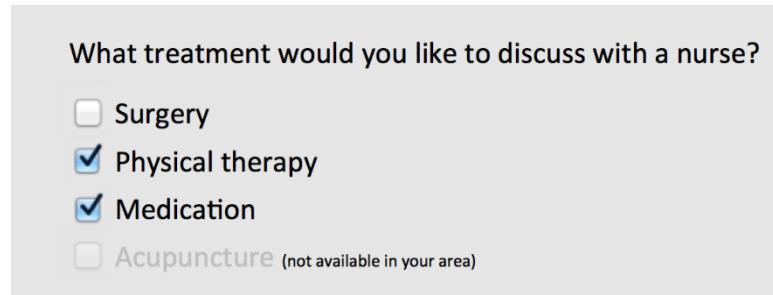
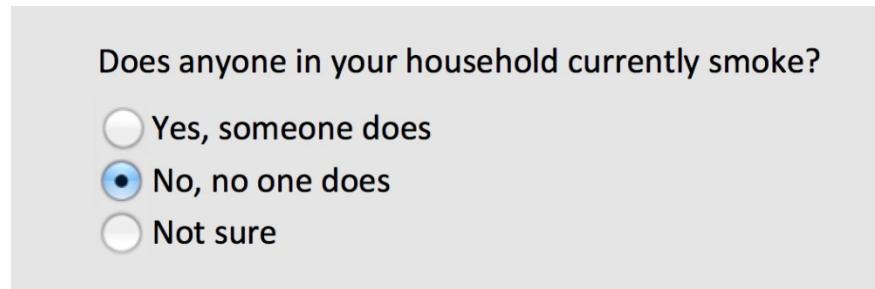
- Menu bars, pop-up menus, toolbars, palettes and ribbons
- **Shortcuts and gestures for rapid interaction**
- Long lists
- Linear versus simultaneous presentation

- 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 NASA website's main page. At the top, there is a navigation bar with links to "Missions", "Galleries", "NASA TV", "Follow NASA", "Downloads", "About", and "NASA Audiences". A search bar is also present. Below the navigation bar, there is a banner for "The Martian" Director Ridley Scott Discusses NASA's Journey to Mars. To the right of the banner is a video player showing a view of Mars from space. The main content area features a grid of news stories:

- One-Year Crew**: Two astronauts in a space station module.
- Halfway There**: Two astronauts working on equipment.
- Eclipse**: A video player showing a rare supermoon eclipse.
- NASA Scientist Sheds Light on Rare Sept. 27 Supermoon Eclipse**: A text-based story.
- Image of the Day**: A small thumbnail image.
- Good Morning From the International Space Station**: A video player showing a view from the ISS.
- The Real Martians**: A text-based story with a thumbnail of a Mars rover.
- Real Martian Videos**: A link to a video section.
- Tweets**: A Twitter feed with a message about 3D-printed habitats.
- Space Travel**: A video player showing a rocket launch.
- New Green Propellants Complete Milestones**: A text-based story.
- Fire and Smoke**: A video player showing a wildfire.
- Rough Fire Still Burning in California**: A text-based story.
- Real Martians Moment: We're Learning More!**: A video player showing a close-up of a rock.
- SDO Solar Mission**: A text-based story with a thumbnail of the Sun.
- SDO Catches an Earth-Moon Double Photobomb**: A video player showing a celestial event.

At the bottom, there is a "MORE STORIES" button and a footer with links to "No Fear Act", "FOIA", "Privacy", "Office of Inspector General", "Agency Financial Reports", and "Contact NASA". The footer also includes the NASA logo and the text "National Aeronautics and Space Administration" and "NASA Official: Brian Dunbar".

This screenshot shows the NASA TV channel on a mobile browser. The interface is similar to the main NASA website, featuring a navigation bar with "NASA TV", a search bar, and a menu icon. The main content area displays a video player showing two astronauts working on equipment, with the caption "One-Year Crew Halfway There". Below this, there is another video player showing three people in a lab setting.

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  0 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
Trailers
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

Human Computer Interaction

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 [≥ 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

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- Aule Studio
- Biblioteca
- Segreteria generale studenti

Aule Studio - Seleziona 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

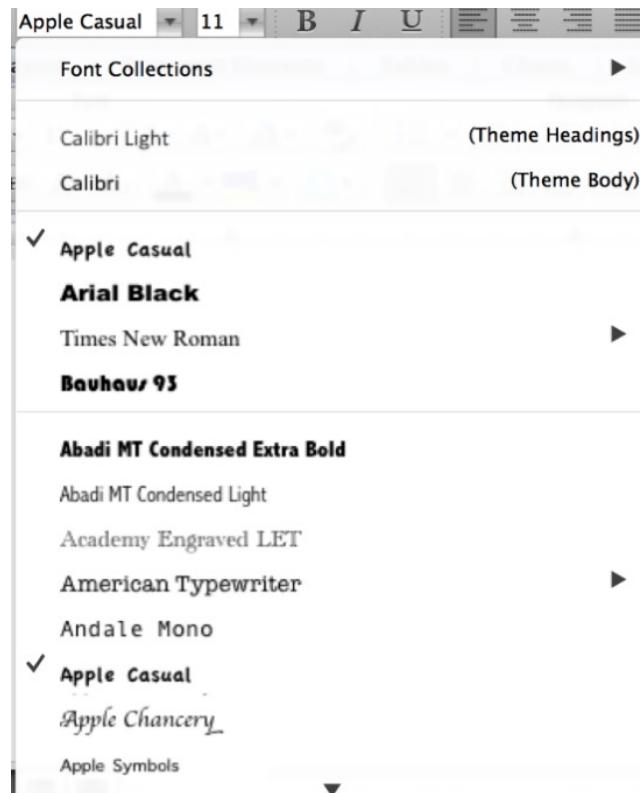
A partire da giorno 15 luglio 2020, è consentito l'uso della seguente Sala Studio della Sede Centrale:
- Sala studio al Secondo Piano di C.so Castelfidardo 39, codice locale TO_CIT11_XP02_001

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						
		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								

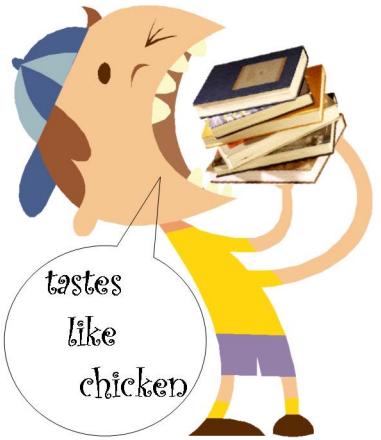
Menu Grouping: example

- 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...

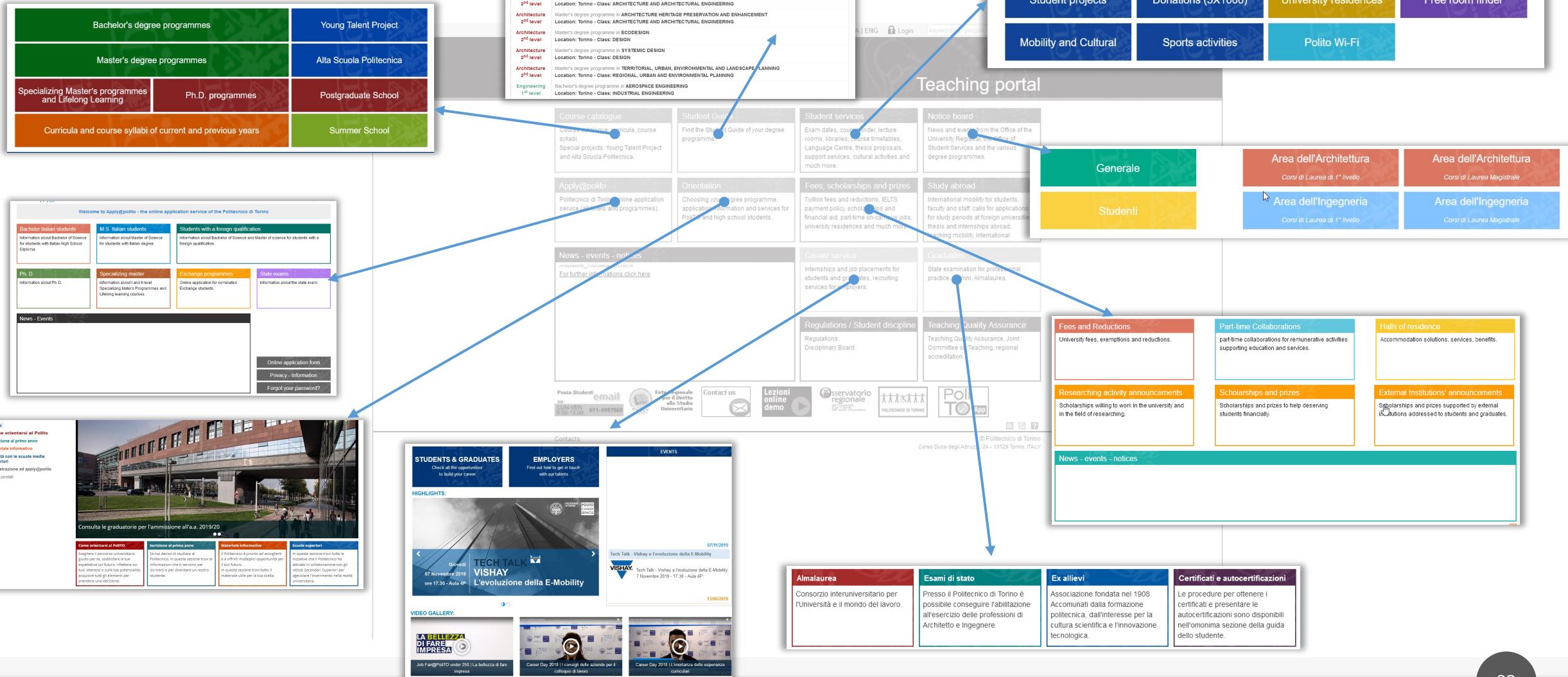
Example

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 links ('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 a phone number 010-3330 011-897965), 'Ente Regionale per il Diritto allo Studio Universitario' (with a logo), 'Contact us' (with an envelope icon), 'Lezioni online demo' (with a play button icon), 'Osservatorio regionale' (with a green icon), 'POLITECNICO DI TORINO' (with a blue icon), and 'PoliTO App' (with a blue icon). There are also social media icons for YouTube, Facebook, and Twitter, along with a question mark icon. The footer contains the text '© Politecnico di Torino Corso Duca degli Abruzzi, 24 - 10129 Torino, ITALY'.

Example



Example

Survey@Polito

Administration -- Logged in as: **corno**

Surveys: Smart Home Survey

Survey Smart Home Survey (ID:365355)

Title: Smart Home Survey (ID 365355)
Survey URL (English): <https://survey.polito.it/365355/lang-en>

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> 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

Common Problems

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

Icons

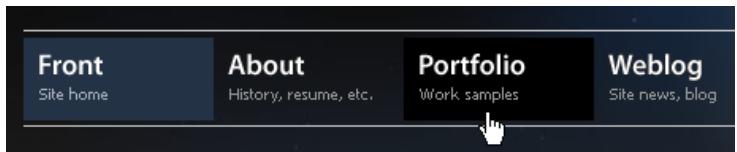
- Icons facilitate recognition over recall
 - When they are consistently used, and frequently visible
- Redundant coding helps recognition and memorization
 - Icon + Text + Tooltip + Context



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 dark-themed navigation bar. It has five items: 'Front Page' (This is where it all begins), 'Our Portfolio' (Let us show you our work), 'Who We Are' (Get to know us a little better, ), 'What We Do' (A rundown of our services), and 'Contact Us' (How to get in touch with us).



A screenshot of a dark-themed navigation bar. It has six items: 'Newsletter' (Free newsletter), 'Store' (Maximize your ministry), 'Events' (Attend an event near you, ), 'Podcast' (Free audio training), 'Coaching' (Networks for Worship Leaders), and 'free resources'.

<https://www.smashingmagazine.com/2008/02/navigation-menus-trends-and-examples/>

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

* 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:

- Text input fields:** Let you input text.
- Checkboxes:** NonFederal (99), Federal (57).
- Radio buttons:** Yes, No.
- Dropdowns:** Find your state or... Go.
- Date pickers:** SEP 18th 2010, JUN 22.
- Social sharing:** Send, Post, Tweet.
- Buttons:** ON, OFF.
- List boxes:** Are like dropdowns, But they let you make multiple selections, Like checkboxes do.
- Navigation:** General Settings, Your Profile, Sign Out.
- Calendars:** Sep. 2010, Jun 22.
- File icons:** Document, Image, Video, etc.
- Grid icons:** Grid, List, etc.
- Menu bar:** Menu Item, Messages (1), About Us.
- Modal window:** This is a box, containing placeholder text: "Lorem ipsum dolor sit amet, consectetur adipiscing elit. Fusce metus. Pellentesque sit amet velit. Phasellus non quam. Nulla diam purus, tristique quis, eleifend ac, molestie eu, sapien. Vestibulum ante ipsum primis. Vestibulum ante ipsum primis." with a READ MORE button.
- Search bar:** Enter Keywords, Search Option One, Search Option Two, Search Option Three.
- Search dropdown:** Enter Keywords, Category, SEARCH.
- Search filters:** Search, Everything, Entries, Photos, Videos, Audio.
- Progress bar:** A horizontal bar with five segments and numbered circles (1, 2, 3, 4, 5) above it.
- Step navigation:** Step 1: Select your plan, Step 2: Select your plan, Step 3: Select your plan.
- Page navigation:** Previous, Next, Page numbers (1-10, 246-247).
- Tag cloud:** Costs (72), Health Conditions (54), Improving Care (53), Prevention (50), Rights, Protections and Benefits (135), Insurance Coverage (141).
- UI buttons:** Clean, Fresh, Modern, Unique, X, +.

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

Example: Redesign This

Attenzione, i seguenti insegnamenti sono in corso di sospensione 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

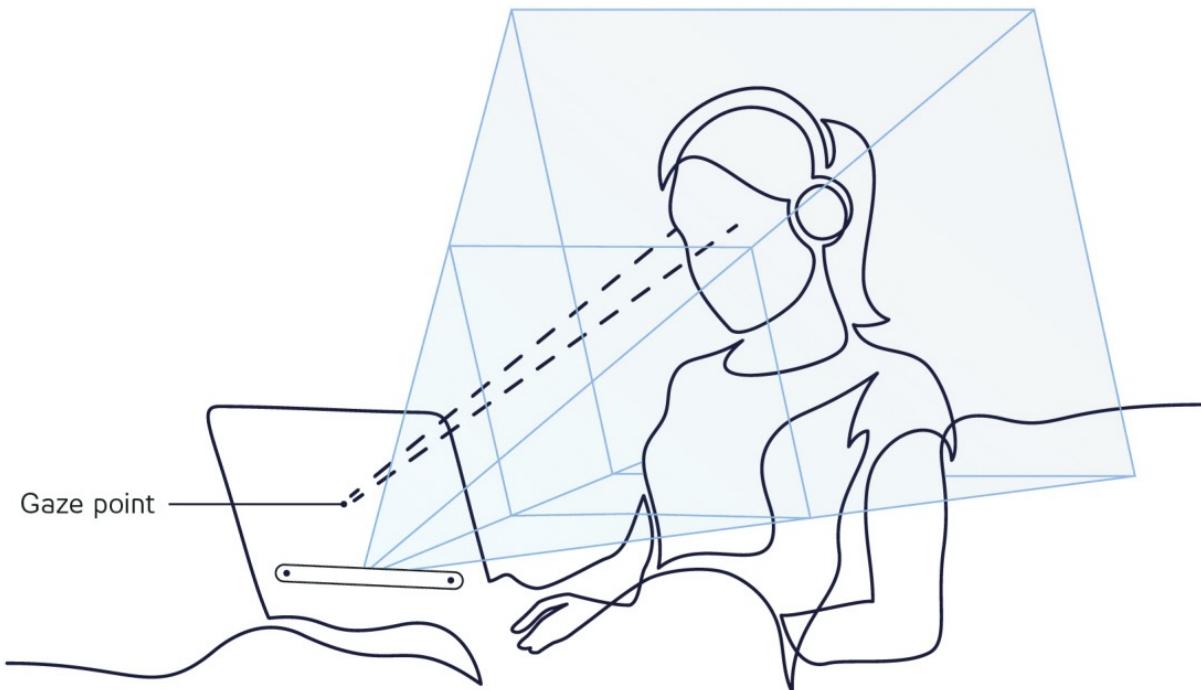
Eye Trackers



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.

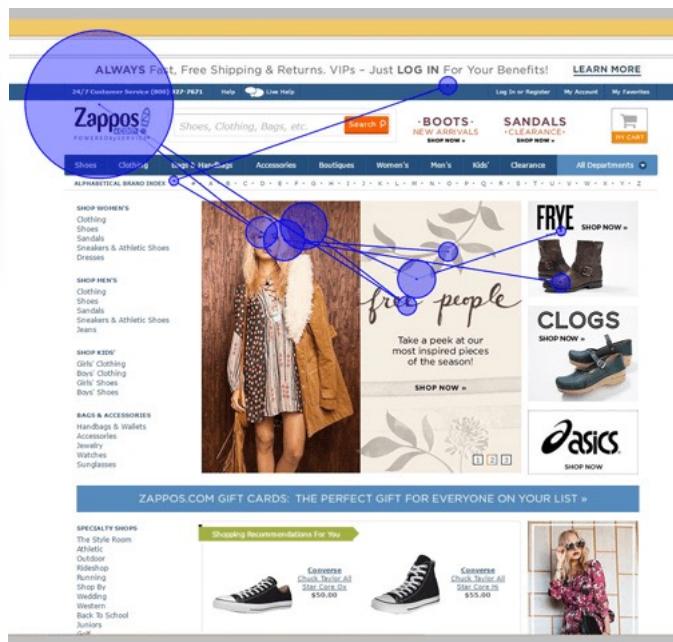


source: <https://www.tobii.com/group/about/this-is-eye-tracking/>

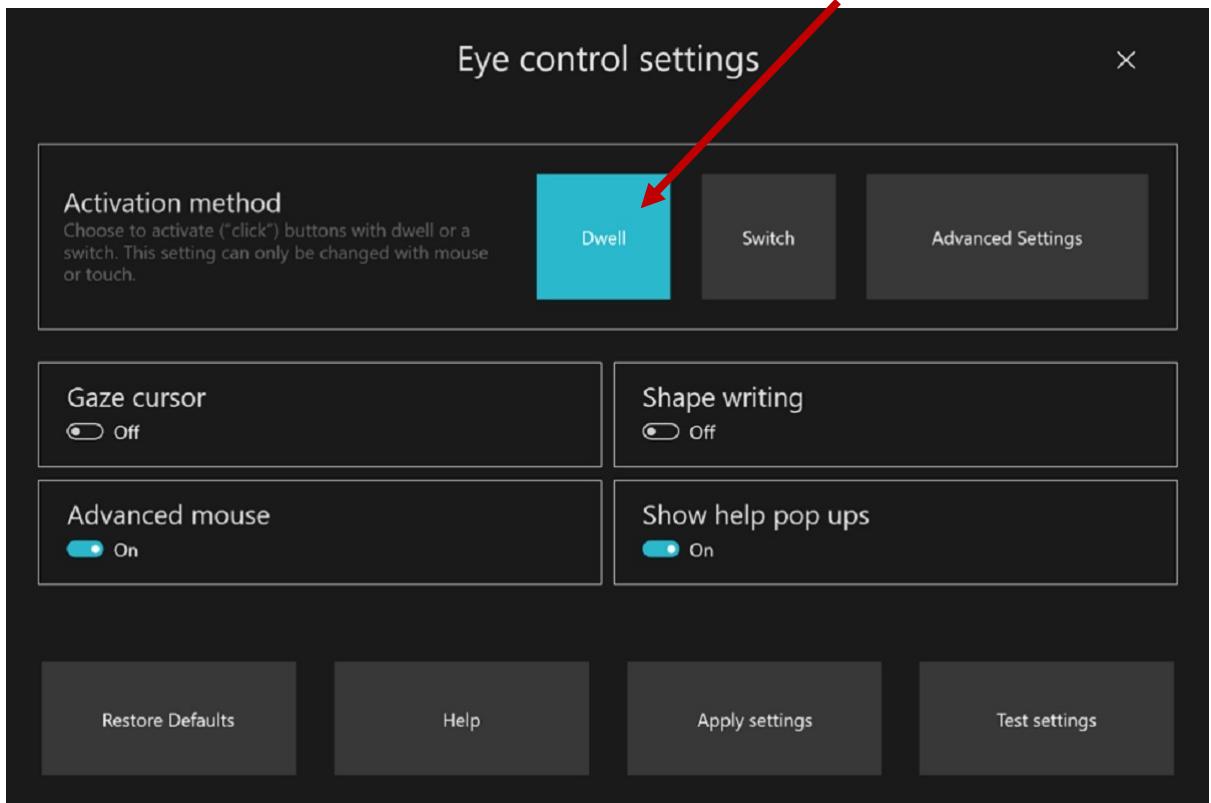
Eye Tracker: Examples



Heatmap and scan path analysis



Beware the Midas' Touch!



Windows 10 Eye Control Settings

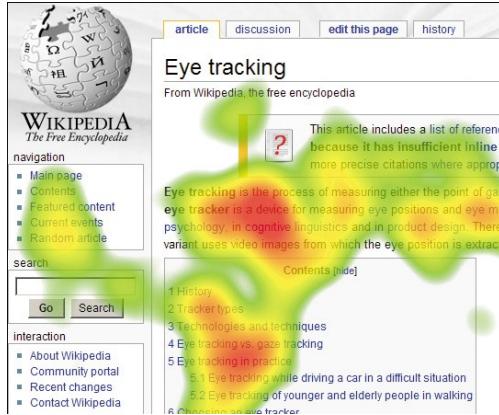
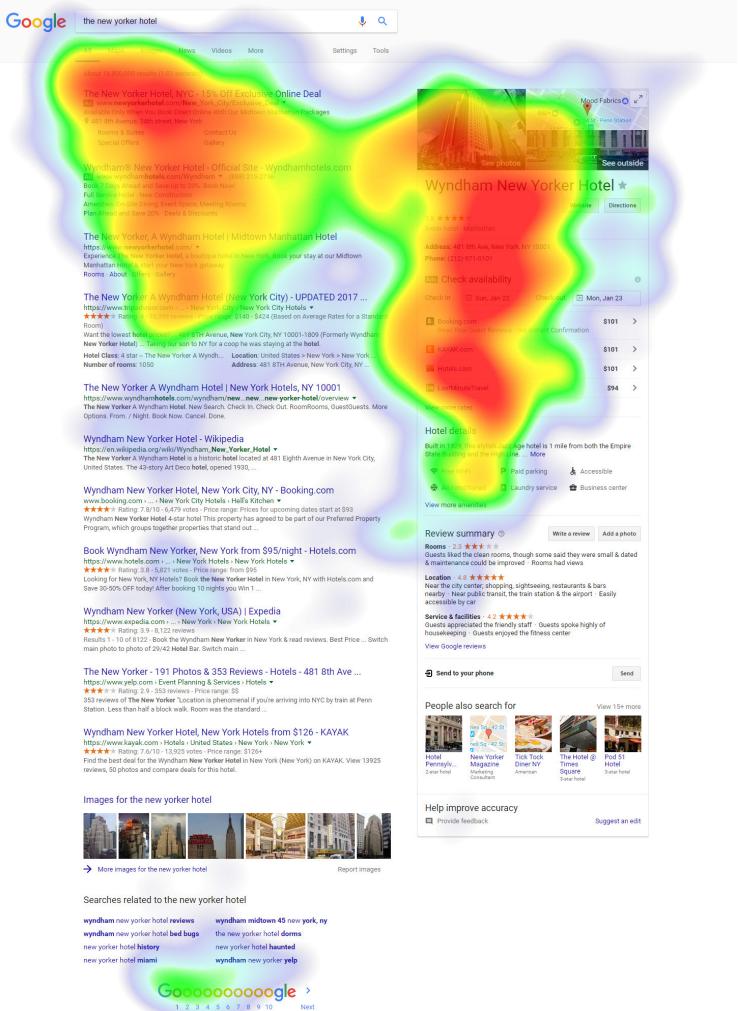
Location on the Page

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

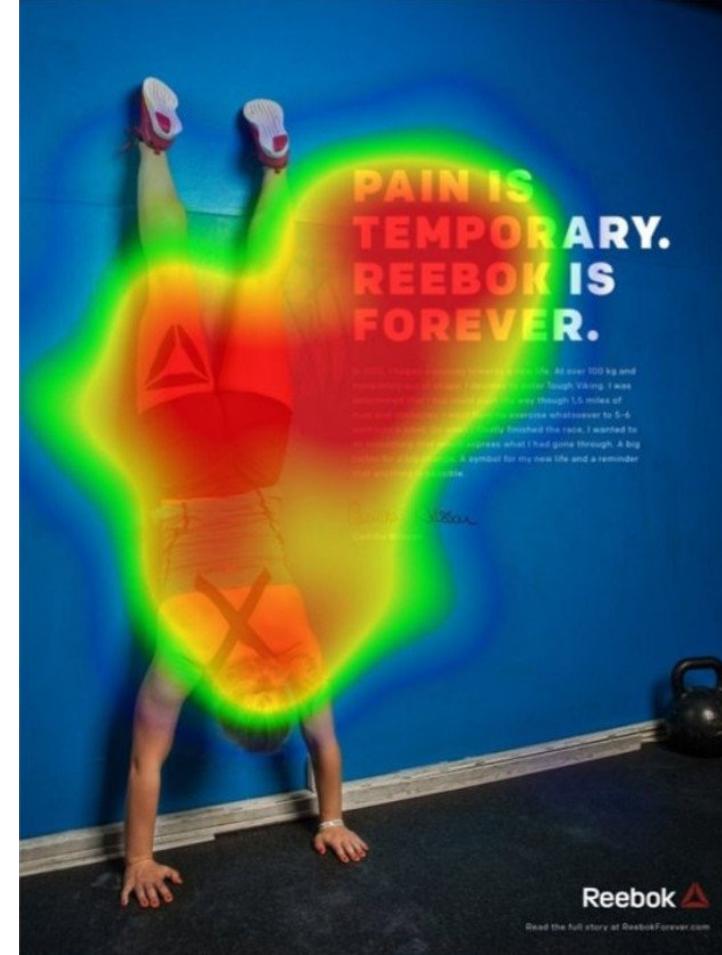
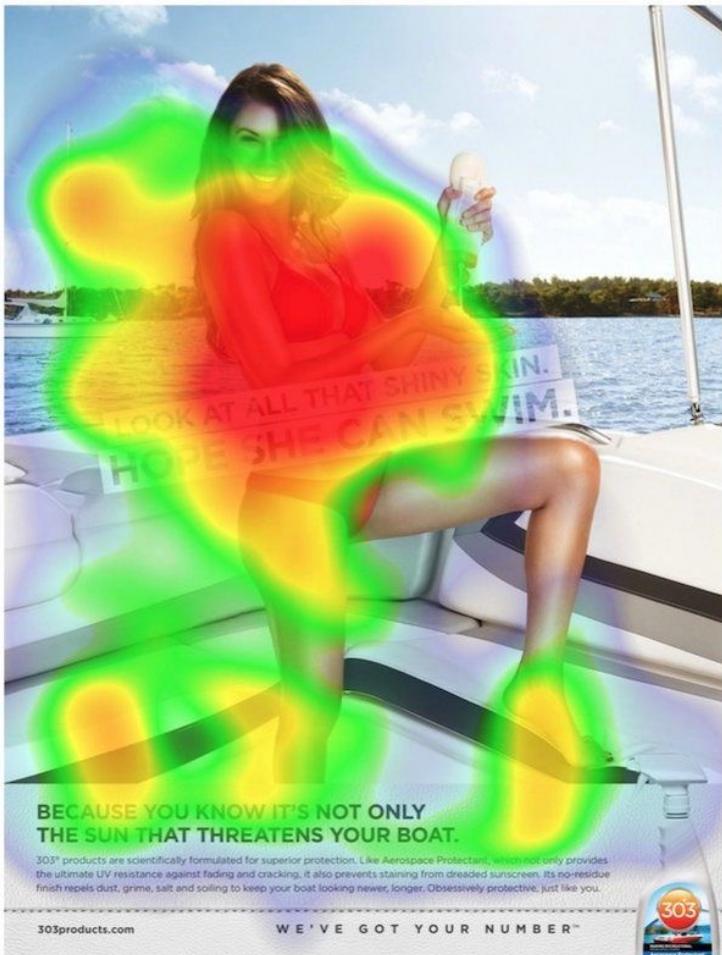
Search “eye tracking heat map” and see the major patterns

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

F-shaped pattern



Did Anyone Ever Look at the Product Name?

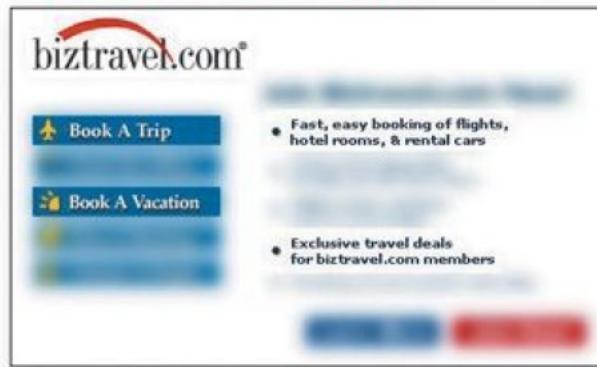


Scanning

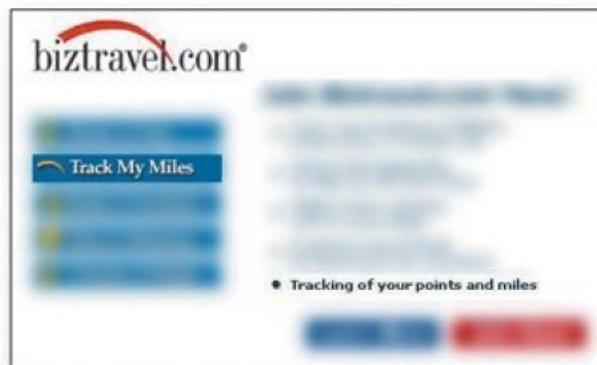
WHAT DESIGNERS BUILD...



WHAT USERS SEE...



I want to
buy a
ticket.



How do I
check my
frequent
flyer miles?

Experiment

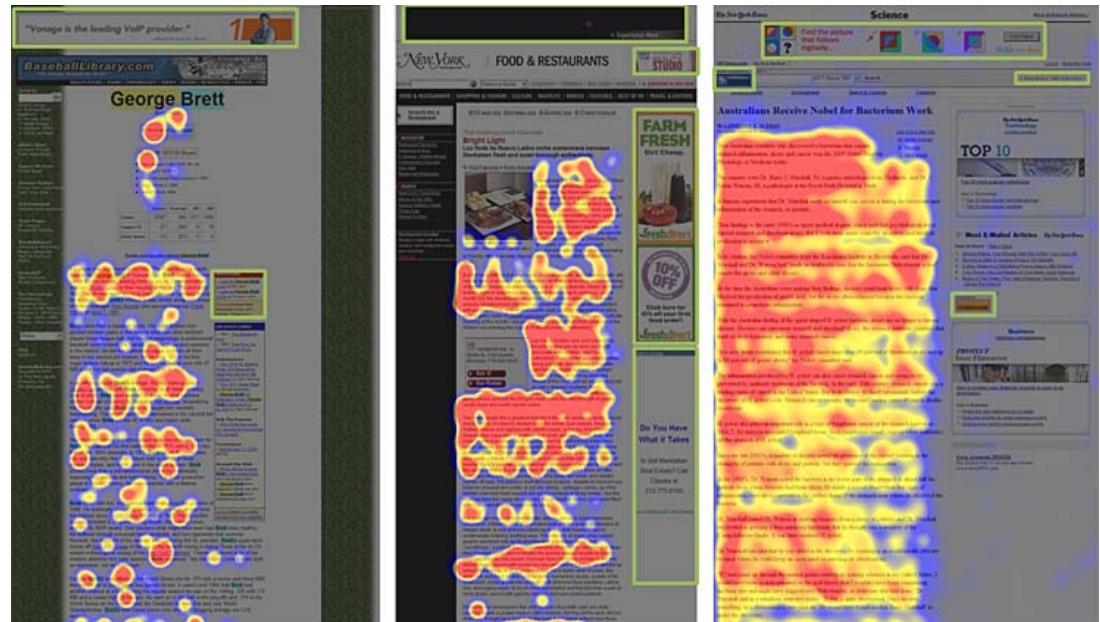
Site Version	Sample Paragraph	Usability Improvement (relative to control condition)
Promotional writing (control condition) using the "marketese" found on many commercial websites	Nebraska is filled with internationally recognized attractions that draw large crowds of people every year, without fail. 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)
Concise text 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%
Scannable layout using the same text as the control condition in a layout that facilitated scanning	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: <ul style="list-style-type: none"> •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) •Buffalo Bill Ranch State Historical Park (28,446). 	+47%
Objective language 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%
Combined version using all three improvements in writing style together: concise, scannable, and objective	In 1996, six of the most-visited places in Nebraska were: <ul style="list-style-type: none"> •Fort Robinson State Park •Scotts Bluff National Monument •Arbor Lodge State Historical Park & Museum •Carhenge •Stuhr Museum of the Prairie Pioneer •Buffalo Bill Ranch State Historical Park 	+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_nuHL_Mjt87THSTIgrsyJ
- Thanks to Fulvio Corno, past teacher of the course, for his work on some of these slides

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