



Visual Design and Fluid Navigation

Human Computer Interaction

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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.

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The Basics of Visual Design

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Text

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Layout

Colors

The Basics of Visual Design

BASIC VISUAL DESIGN

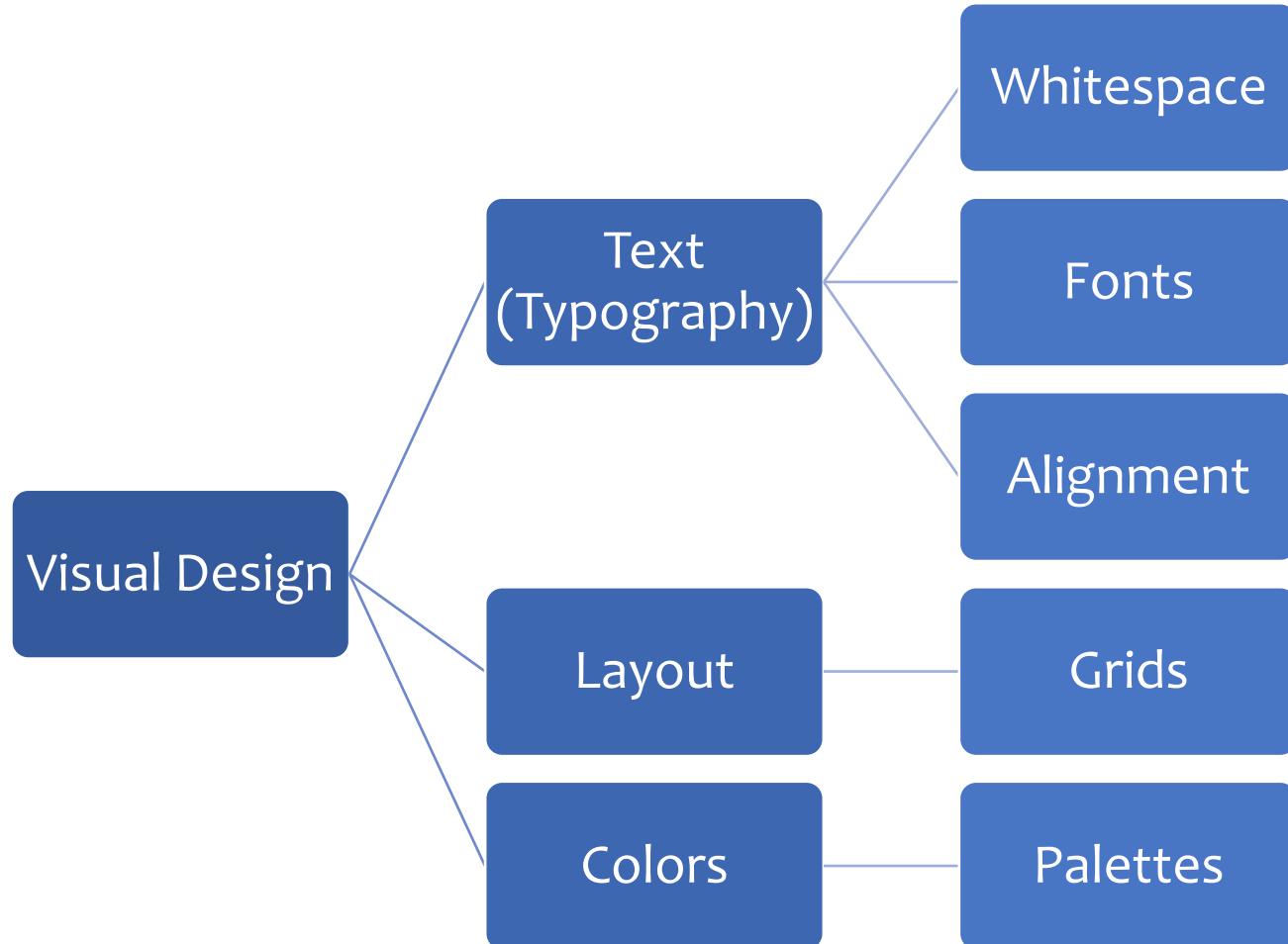
Text

- **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



UNIVERSAL HISTORY ARCHIVE/GETTY IMAGES

Spotlight



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

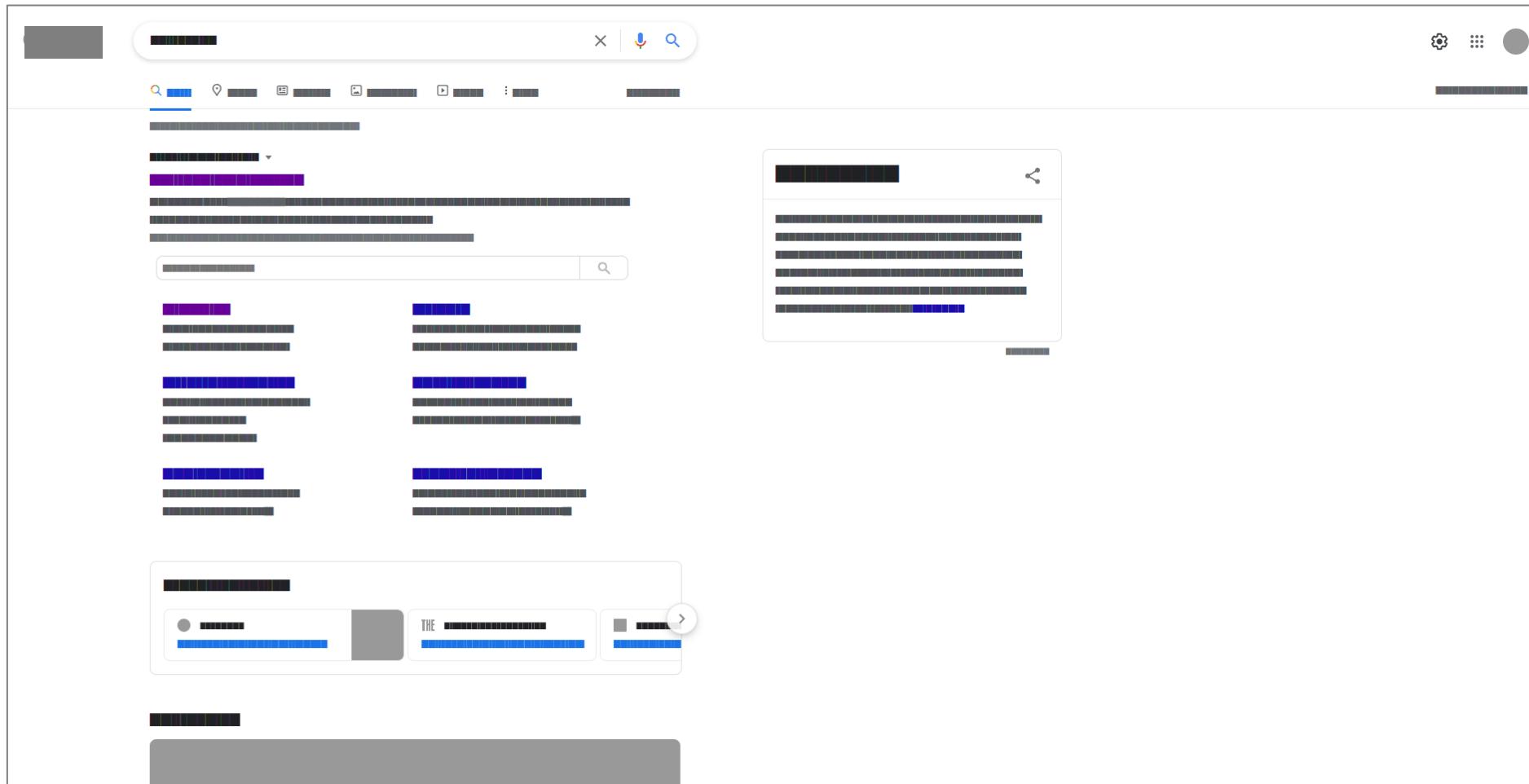


Could Covid-19 vaccines impair a child's future fertility? Officials say no.



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

Recognizable page structure



Recognizable page structure

The screenshot shows a Google search results page for the query "politecnico". The top navigation bar includes the Google logo, a search bar with the query "politecnico", and standard search controls. Below the search bar are filter links for "Tutti", "Maps", "Notizie", "Immagini", "Video", and "Altro", along with "Strumenti" (Tools). A status message "Circa 33.000.000 risultati (0,71 secondi)" is displayed. The first result is a link to the Politecnico di Torino website, with a snippet describing it as a prestigious public institution. To the right of the snippet is a detailed card for "Politecnico". The card contains a summary of what a Politecnico is, a link to Wikipedia, and a "Feedback" button. Below the main search results are sections for "Didattica", "Offerta formativa", "Apply@polito", "Orienta", "Corsi di Laurea", and "Scoprire l'Ateneo", each with a brief description and a link. At the bottom left is a "Trova risultati su" (Find results on) section with links to social media and other websites like Timeshighereducation and Topuniv. At the very bottom is a map showing the location of Politecnico di Milano in Milan, Italy.

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" featuring 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 about responsive profiles and community elections; "Collectives" listing groups like "Go Language" (13k members), "Google Cloud" (11k members), and "GitLab" (3k members); and "Related Tags" showing the most popular 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 three dots. There are also buttons for writing a review, traveling, and notifications, along with a user profile picture.

The main title is "Hotel New York City e alloggi". Below it, there's a map of New York City with a button to "Guarda la mappa". There are input fields for "Arrivo" (Arrival), "Partenza" (Departure), and "Ospiti" (Guests) set to "1 camera, 2 adulti, 0 bambini".

A sidebar on the left contains filters for "COVID-19" (checkbox for structures adopting safety measures), "Offerte" (checkboxes for cancellation free, pay later, and special offers), "Prezzo" (price range from 0 € to 623 €, with a slider and dropdown for "Prezzo + tasse e spese"), and "Molto richiesti" (checkboxes for 5 stars, 4 stars, breakfast included, and 5 stars).

The main content area shows a list of 911 hotel structures in New York City, ordered by quality-price. The first result is the "Fairfield Inn & Suites" in New York Midtown Manhattan/Penn Station, which has a rating of 4.5 stars (1.865 reviews), a price of 161 €, and a "Colazione inclusa" (Breakfast included) offer. It also lists other amenities like Wi-Fi, Bar/Lounge, and Fitness Center.

Recognizable page structure

TBS Newsi リアルタイム経営こそ、IT戦略 FUTURE Architect

TOKYO BROADCASTING SYSTEM, News Portal Site

News10 アラート元議長の脳からボロニウム検出。暗殺の可能性高まる 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] [みずき基力因應法] [厚生省] [米盗賊疑惑]

最終更新：2013年11月7日(木) 04時20分

NEW「三越伊勢丹」も不適切表示、他の百貨店にも拡大

大手百貨店の三越伊勢丹ホールディングスは、グループの百貨店などにあるレストラン14店で、メニューに違う食材を使った料理を提供していたことを明らかにしました。不適切な表示は、小田急、そこなどの百貨店にも広がっています。

続きを読む

■ NEW 日本人初の船長・若田さん、さよう宇宙へ

日本人で初めて国際宇宙ステーションの船長を務める若田光一さんが、日本時間7日午後の…

■ NEW 特定秘密保護法案」さようから国会審議

政府が指定する特定秘密を漏らした公務員らへの罰則強化する特定秘密保護法案は、さよ…

■ NEW 豚木議員、金正恩氏の後見人・張成沢氏と会談

北朝鮮を訪問中のアントニオ豚木委託議員自らが、金正恩(キム・ジョンウ)第一書記の…

■ NEW 山西省連続爆発事件、共産党本部狙った計画的犯行か

6日、中国・山西省の共産党本部ビルで起きた連続爆発事件です。爆弾がビル周辺の数か所…

■ 社会 >一覧へ

■ NEW 実ネット販売、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、原子力機構に厳重注意

■ NEW 温室効果ガスの平均濃度、過去最高値を記録

■ 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

■ 安曇奈牧場と牛乳法、簡便会計などを課題へ

■ NEW 表示適正化対策、消費者庁が業界3団体に要請文

■ 「嵐」など芸能人の偽サイン販売、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

■ 歌舞伎町のホスト死変、何者かが暴行か

■ NEW 小学校の4階から小6男児脱落、意識不明の重体

■ 政治 >一覧へ

■ NEW 特定秘密保護法案」さようから国会審議

■ 日本版NSC法案、衆院特別委で可決

■ 自衛隊が離島防衛演習、沖縄・宮古島に地対艦ミサイル展開

■ 岸田外相、中国・韓国との民間交流が重要という認識示す

■ 「婚外子」遺産相続の民法改正案、自公が成立目指す

■ 原発事故の対応見直し、国が積極的懇意へ

■ 経済 >一覧へ

■ NEW 「三越伊勢丹」も不適切表示、他の百貨店にも拡大

■ NEW 東武鉄道系ホテルでもメニュー表示と異なる食材を使用

■ 食材「虚偽」問題で注目、「成型肉」とは？

関連リンク TBS Newsi | NEWS10 | 新聞 | 動画 | サウモード | 財務監査 | 緊急連絡 | ニュースグード | グローバルオピニオン | ビジネスクリック | TBS TOPページ | TBS報道番組一覧 | JNN各局

Uses Conventions = Recognizable 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



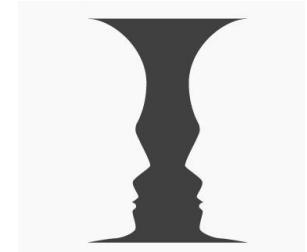
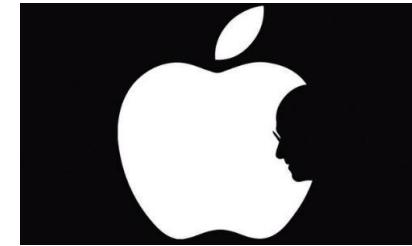
<https://www.interaction-design.org/literature/topics/gestalt-principles>

<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 2010!

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!
WHO SENT THIS TO THE CLIENT?
THIS IS EXHAUSTING!

WAIT, WHO MADE THAT DECISION?
WHERE DO I PUT THAT?
Etc., etc., etc.

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.

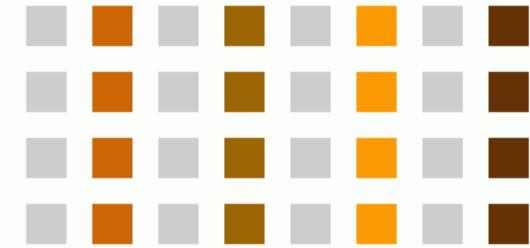
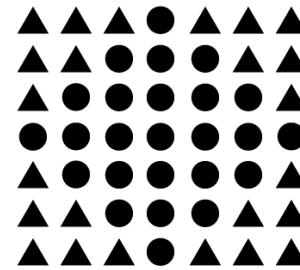
SYNDICATES STARTUPS FUNDS STARTUP JOBS RECRUITING MORE ▾

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

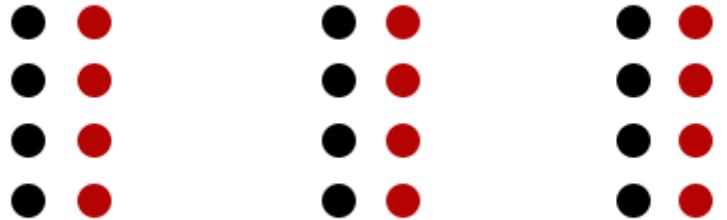


The screenshot shows the GitHub sign-up interface. At the top, there's a navigation bar with links for 'Explore', 'Features', 'Enterprise', 'Pricing', 'Sign up' (in green), and 'Sign in'. Below the navigation, the main heading 'Where software is built' is displayed, followed by a subtext: 'Powerful collaboration, code review, and code management for open source and private projects. Public projects are always free.' A note below states: 'Private plans start at \$7/mo.' There are three input fields: 'Pick a username', 'Your email', and 'Create a password'. A note below the fields says: 'Use at least one lowercase letter, one number, and seven characters.' A large green 'Sign up for GitHub' button is centered. Below the button, a small note reads: 'By clicking "Sign up for GitHub", you agree to our terms of service and privacy policy. We will send you account related emails occasionally.' 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. At the top, there are links for 'GNN', 'NEWSLETTER', social media icons for Twitter and Facebook, and buttons for 'ABBONATI' and 'ACCEDI'. The main title 'LA STAMPA' is prominently displayed. Below the title, there are several news articles with small images and titles. One article features a video thumbnail of a man's face. The layout includes a menu bar, a top news section, and local edition options for 'TORINO'.

- I demoni di Hamilton: "Non è facile come sembra, per me è durissima"** - STEFANO MANCINI
- Lavorare meno per rendere di più: la ricetta funziona davvero** - EMANUELA GRIGLIE
- Reportage Trombe d'aria, pioggia e fiumi esondati: in Liguria torna l'incubo alluvione** - MARCO MENDUNI
- ArcelorMittal abbandona Taranto e l'ex Ilva. Scoppia la polemica. L'azienda: c'era il diritto di recesso** - PAOLO BARONI
- Intervista - Calenda: sull'Ilva di Taranto distrutto il lavoro di anni!** - PAOLO BARONI
- ArcelorMittal si tira indietro sull'Ex Ilva, ecco quanto pesa la decisione su Taranto** - GIULIA CIANCAGLINI
- La storia dell'acciaieria più grande d'Europa. Ecco l'Ilva dal 2012 a oggi** - NICOLA PINNA
- Il surriscaldamento climatico è arrivato nel profondo delle Alpi** - SECONDO NOI
- Sud svuotato e senza lavoro: lo Svimez lancia l'allarme recessione** - MARCO SODANO

Examples: proximity



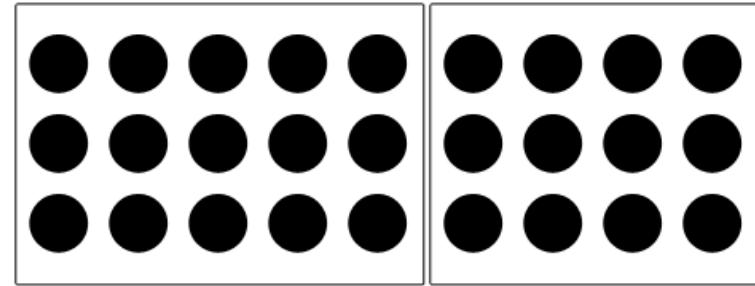
A screenshot of the Walmart website homepage. At the top, there's a navigation bar with links for 'Hello, Sign In' and 'My Account'. Below the navigation, a banner says 'Save big in every department'. The main content area features a grid of 18 small images representing different product categories: Electronics (iPad), Home (blender), Exercise & Fitness (woman on treadmill), Health (vitamin bottle), Clothing & Jewelry (pink top and pants), Furniture (blue armchair), Cold Weather Prep (person in snow), Tax Preparation (TurboTax logo), Auto & Tires (tire), Office Supplies (black trash can), Home Improvement (drill), and Outdoor Sports (tent). There are also images for Jackson Hewitt Tax Preparation, H&R Block, and a baby in a car seat.

A screenshot of the VICE news website homepage. The top navigation includes '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) with an image of a cannabis plant; 'The Women Who Love Ted Cruz' (Feb 24, 2016) with an image of a woman kissing another woman; 'How Donald Trump Won Nevada's Cliven Bundy Vote' (Feb 24, 2016) with an image of Donald Trump wearing a cowboy hat; and other articles like 'Broadly' and 'STUFF'.



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

Examples: common region



A screenshot of a Pinterest search results page for the term "architecture". The interface includes a header with a green "architecture" button, a sidebar with a "Pinterest" icon and a "Parisa" profile, and a main feed of various pins. Pins include images of a circular window in a wooden structure, a wooden MacBook skin, a vertical garden wall, a modern house with a glass roof, and a spiral staircase. Each pin has a small preview image, a title, and some descriptive text or a link.

A screenshot of a Houzz article titled "11 Things You Didn't Think You Could Fit Into a Small Bedroom". The post was made by Houzz yesterday at 5:30am. It features a thumbnail image of a small bedroom with blue walls and a large window. The main text discusses how clever designers fit storage, murals, and chandeliers into small spaces. Below the text is a "WWW.HOUZZ.COM" link. At the bottom, there are sections for "Like" (157), "Comment", "Share", and "Top Comments". A comment from "Frankie Sez" is shown, along with a reply from "Country Mountain Homes". A "View 2 more comments" link is at the bottom.



Examples: continuity

Customers Who Bought This Item Also Bought

The screenshot shows a grid of five book covers from Amazon's 'Customers Who Bought This Item Also Bought' section. Each book has its title, author, description, rating, and price.

Book Title	Author	Description	Rating	Price
CROSSING THE CHASM	GEOFFREY MOORE	Marketing and Selling Disruptive Products	★★★★★ 72	\$12.35 ✓Prime
THE LEAN STARTUP	ERIC RIES	How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses	★★★★★ 1,062	\$16.66 ✓Prime
THE INNOVATOR'S DILEMMA	CLAYTON M. CHRISTENSEN	How Your Company Can Thrive in the Age of Disruption	★★★★★ 209	\$10.06 ✓Prime
THE INNOVATOR'S SOLUTION	CLAYTON M. CHRISTENSEN	Creating and Sustaining Successful Growth	★★★★★ 22	\$18.33 ✓Prime
HOW WILL YOU MEASURE YOUR LIFE?	CLAYTON M. CHRISTENSEN	How Will You Measure Your Life?	★★★★★ 583	\$15.86 ✓Prime

Page 1 of 20



Step 1

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



Step 2

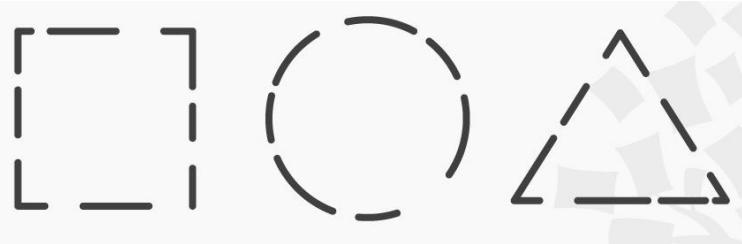
Our friendly servers organize your food for delivery - hot and ready to eat!



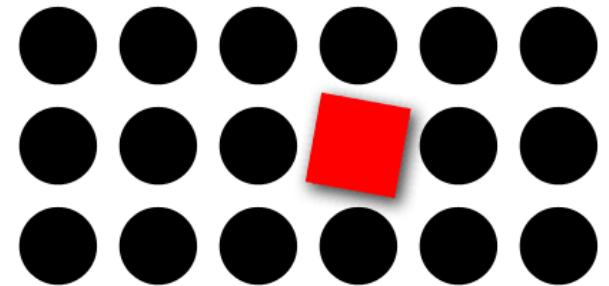
Step 3

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

Examples: closure



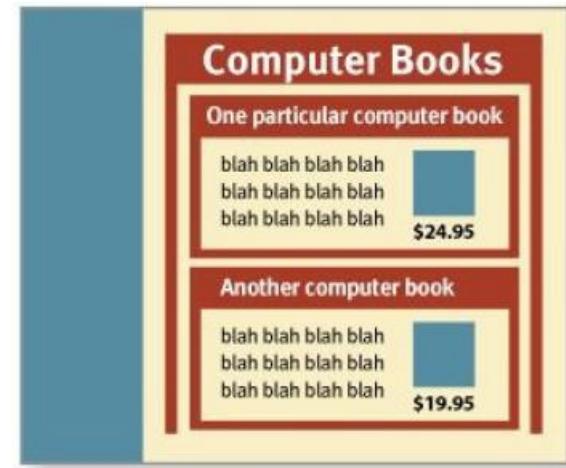
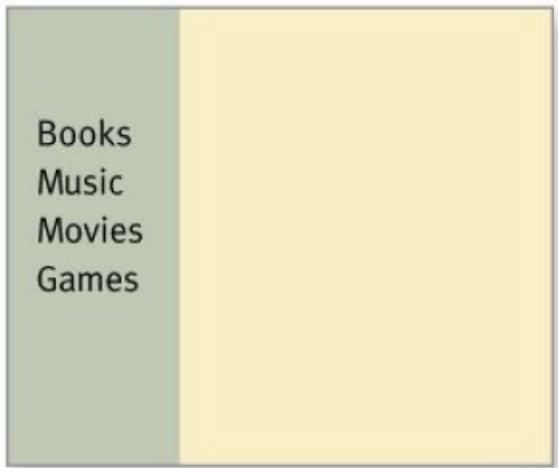
Examples: focal point



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, 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 homepage features a dark background image of a person holding a grocery bag filled with groceries. Overlaid on the image is a white rectangular form containing the Instacart logo and the text "Groceries delivered in 1 hour". It also includes a placeholder "Enter your zip code to see your local stores", a "Find Stores" button, and a link "Already have an account? Log In". At the bottom of the form, there is a green banner with the text "FREE delivery on your first order*".

Examples (applying Gestalt)

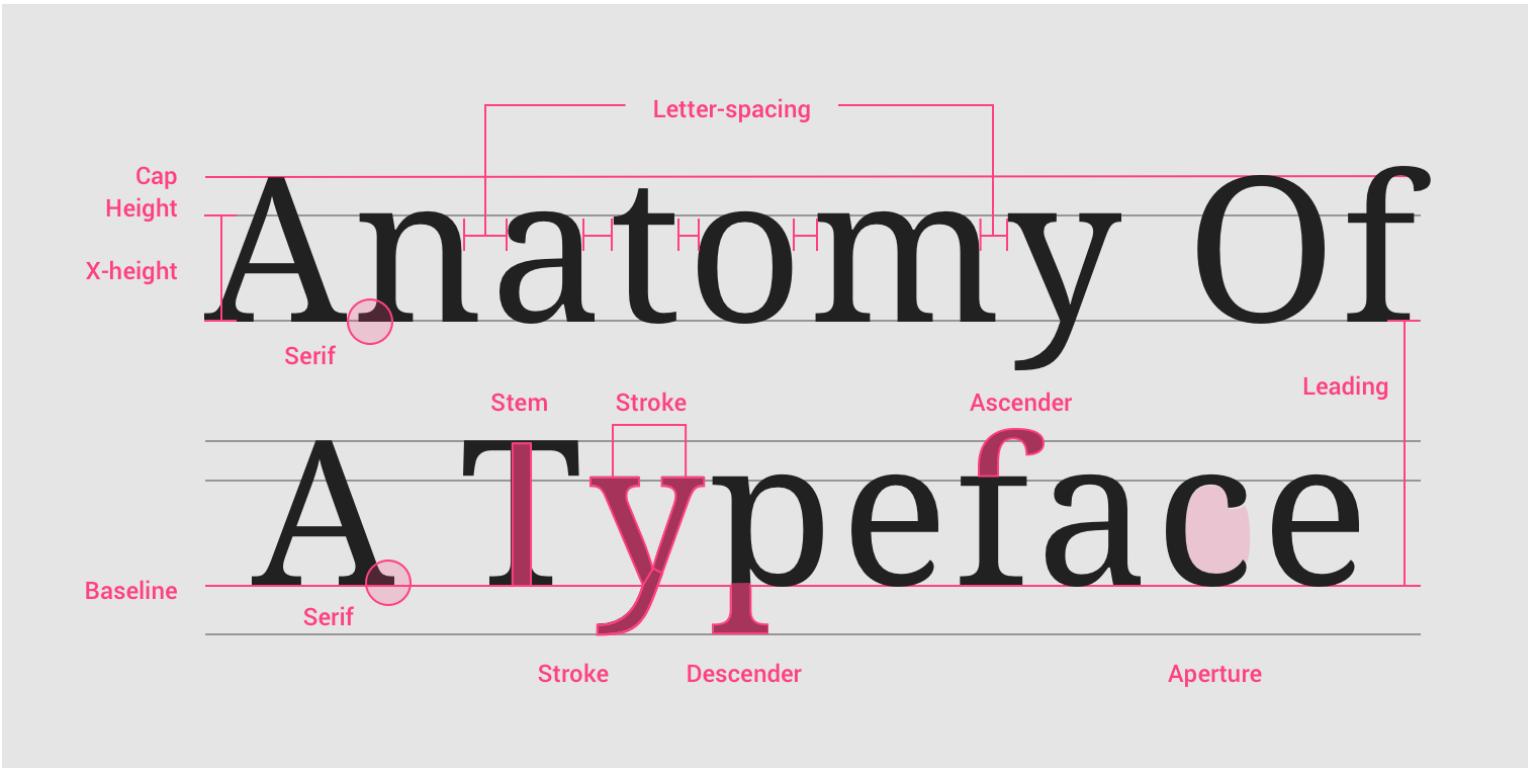


Typography

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

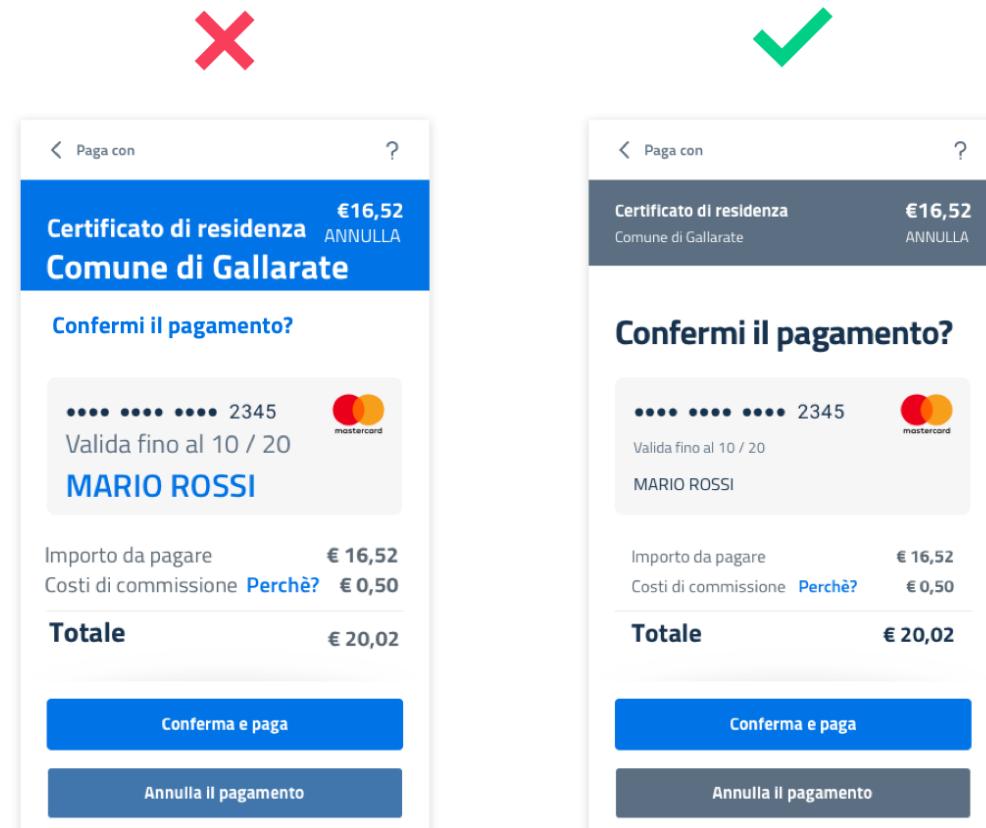
Scale Category	Typeface	Font	Size	Case	Letter spacing
H1	Roboto	Light	96	Sentence	-1.5
H2	Roboto	Light	60	Sentence	-0.5
H3	Roboto	Regular	48	Sentence	0
H4	Roboto	Regular	34	Sentence	0.25
H5	Roboto	Regular	24	Sentence	0
H6	Roboto	Medium	20	Sentence	0.15
Subtitle 1	Roboto	Regular	16	Sentence	0.15
Subtitle 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>

Example: Text conveys hierarchy

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>

Example: 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

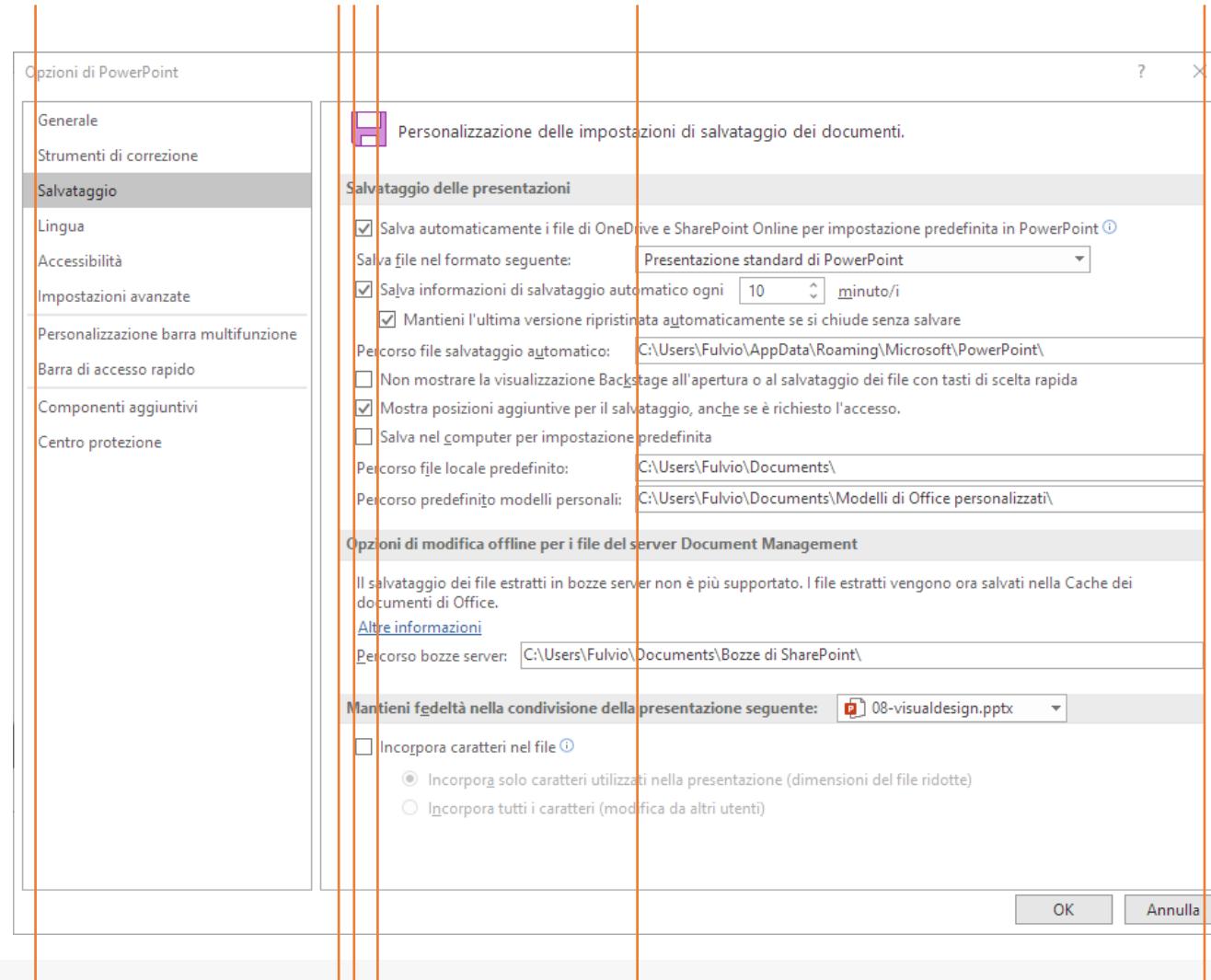
Grids and Alignment

Exploiting grouping and alignment to convey content, at different levels

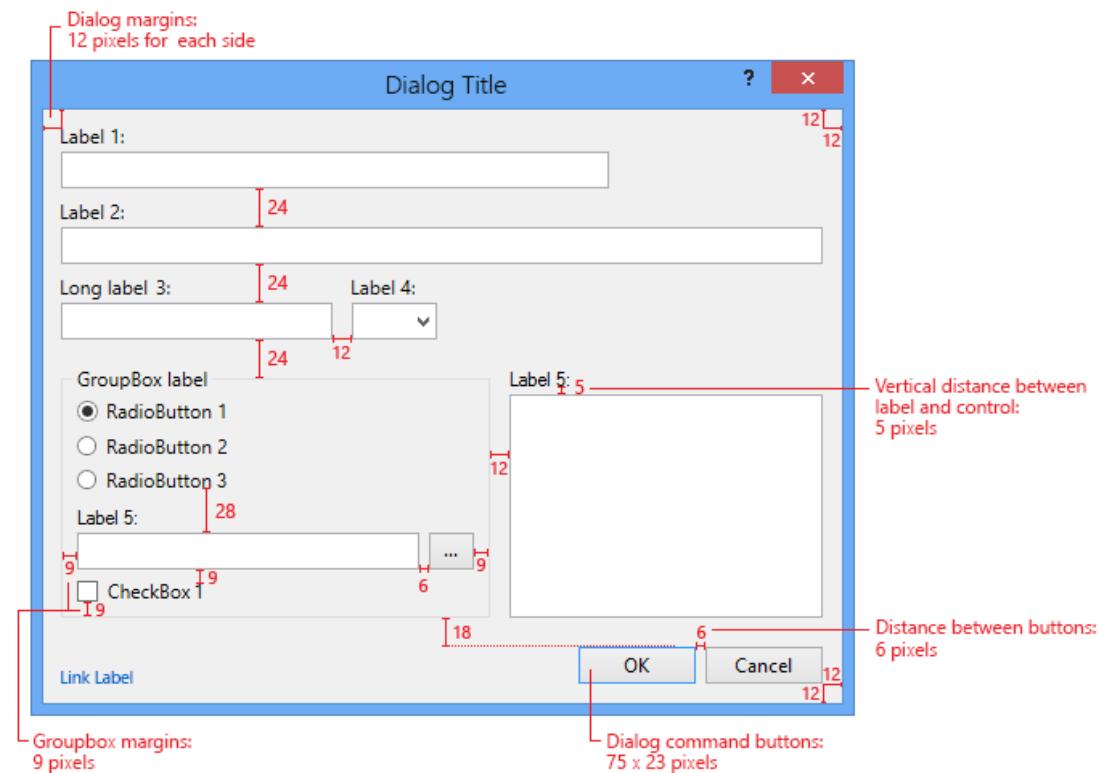
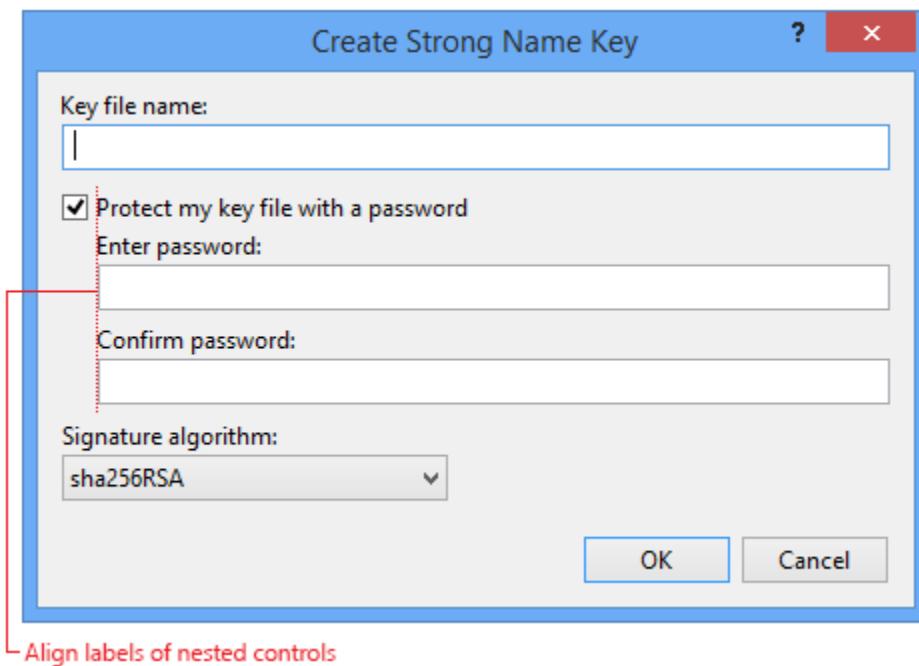
Alignment

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

Example

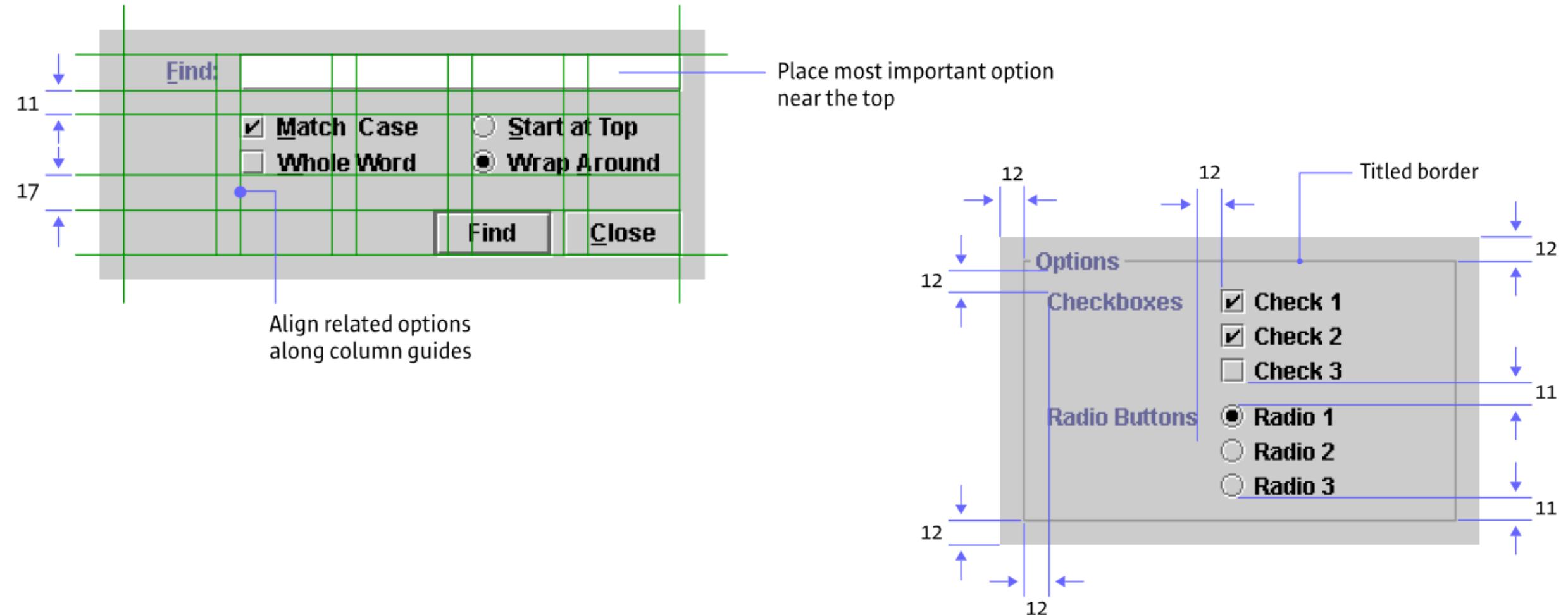


Examples



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

Examples

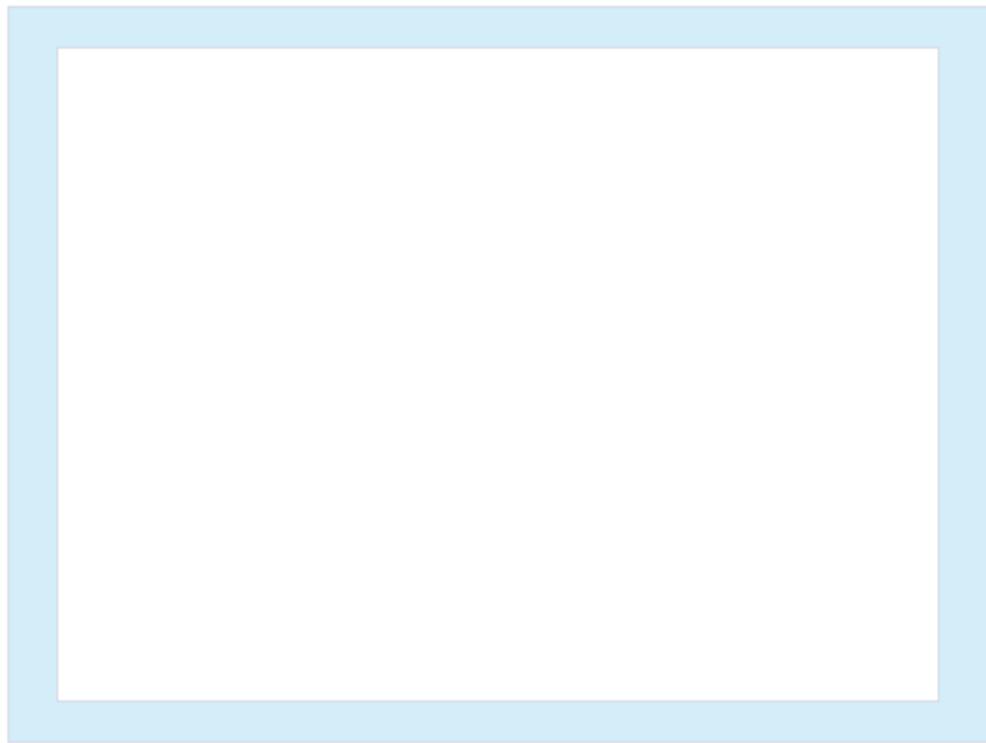


Grid Layout Ingredients

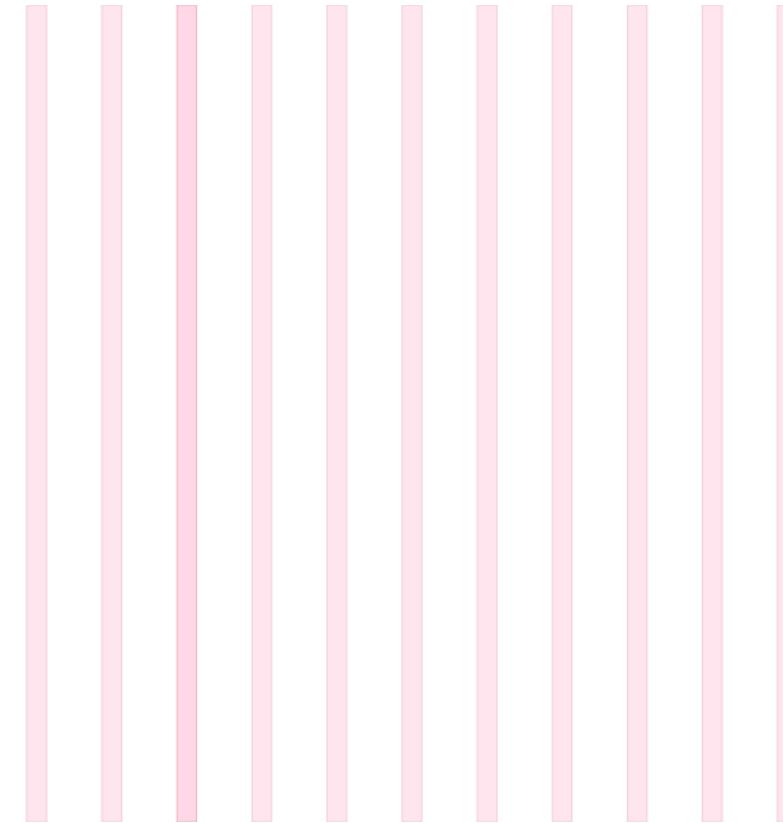
- **Guides:** The edge which you choose to align content with
- **Column:** A vertical division of content
- **Row:** A horizontal division of content
- **Margins:** The area surrounding your content
- **Gutters:** The margins between columns
- **Hang-line:** A horizontal guide to align content to hang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

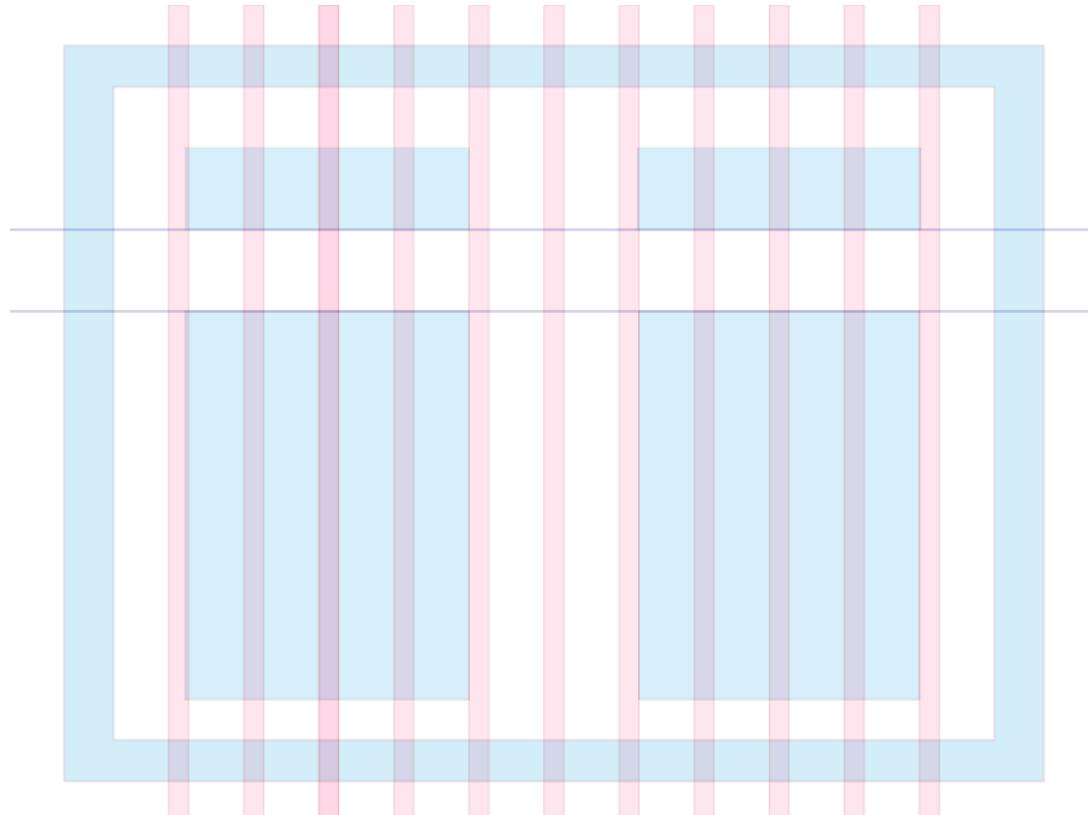


Columns & Gutters



Grid Layout Ingredients

Hanglines and Baselines

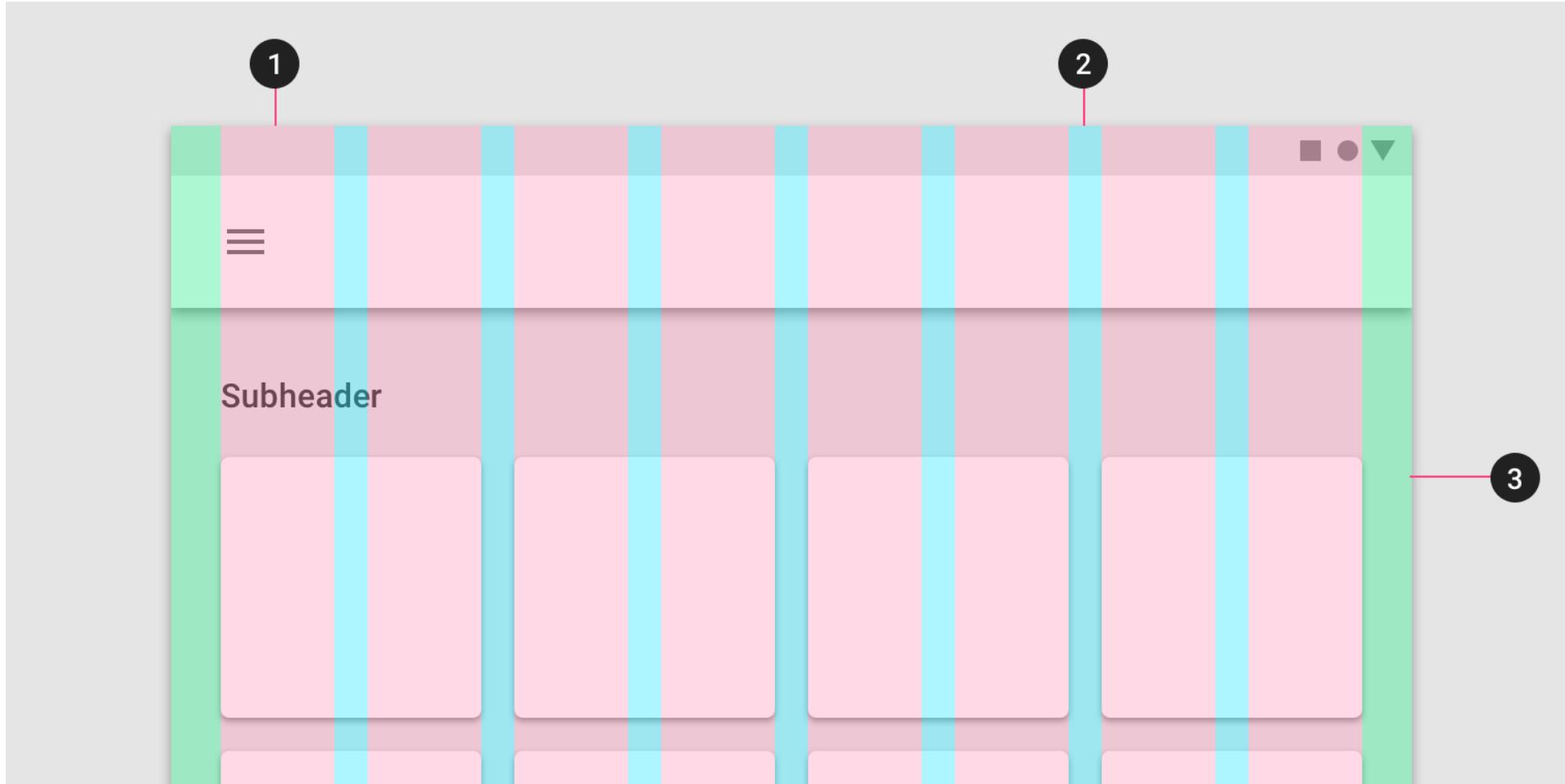


Baseline Grids



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 titled "Learn to Create Websites" from "Tutorial Republic". The website uses a responsive grid layout with a yellow header bar at the top. Below the header, there is a main content area with several sections: "HTML", "CSS", "JavaScript", "Bootstrap", "PHP", "SQL", "References", and "FAQ". Each section contains a brief description and a "Learn More" button. The layout is designed to be responsive, with the number of columns (1, 2, 3, or 4) changing based on the screen width. A large yellow box highlights the first few lines of the HTML code for creating this grid layout.

```
<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

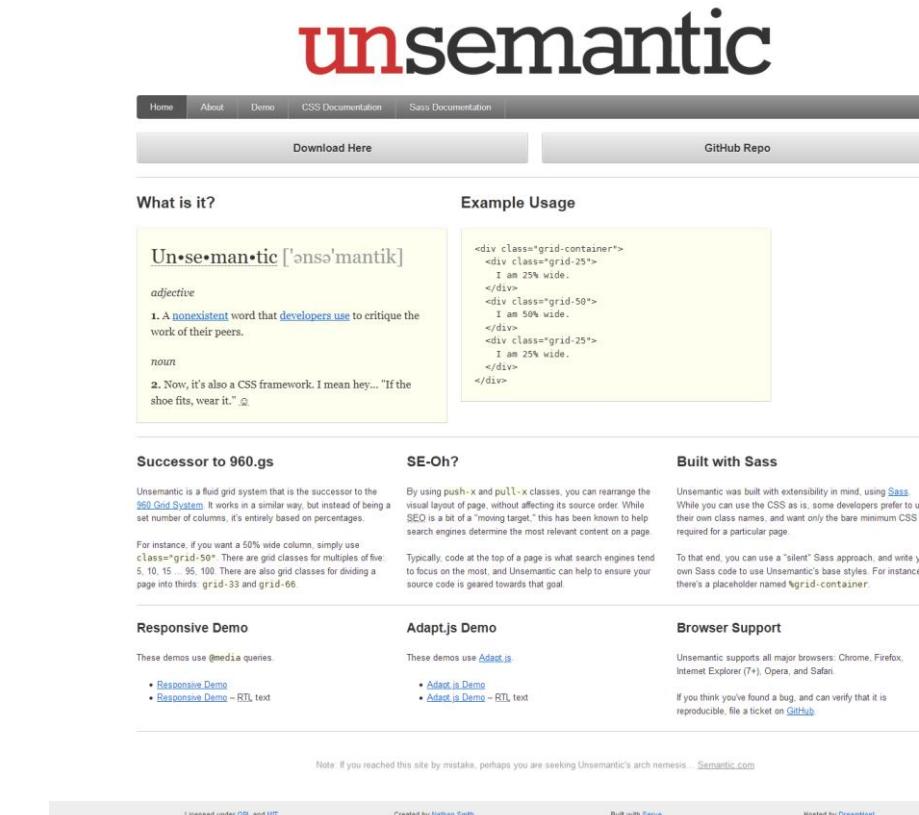
960 grid (fixed width, 12 or 16 col)



The screenshot shows the homepage of the 960 Grid System. At the top, there's a navigation bar with links for Twitter, Download, and a Big ol' DOWNLOAD button. Below the header, there's a large "960 GRID SYSTEM" logo. A section titled "The Changelog" contains an interview about the 960 grid system. There are also links for "VIEW SLIDES ABOUT THE 960 GRID SYSTEM", "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 960 pixels) and the 16-column grid (width 960 pixels). The "Purpose" section discusses the benefits of the grid system. Below this, there's a "More Columns" section and a "Source Order" section. At the bottom, there are two examples of websites using the 960 grid: "Sony Music" and "Drupal".

<https://960.gs/>

Unsemantic (responsive, based on %)



The screenshot shows the homepage of the Unsemantic website. The title "unsemantic" is prominently displayed. Below the title, there are links for Home, About, Demo, CSS Documentation, Sass Documentation, Download Here, and GitHub Repo. The main content area is divided into sections: "What is it?", "Example Usage", "Successor to 960.gs", "SE-Oh?", "Built with Sass", "Responsive Demo", "Adapt.js Demo", and "Browser Support". The "What is it?" section defines "Un•se•man•tic" as an adjective and noun. It includes code snippets for creating a grid container with 25% wide columns. The "Successor to 960.gs" section compares Unsemantic to 960 Grid System. The "Built with Sass" section discusses the extensibility of Unsemantic. The "Responsive Demo" and "Adapt.js Demo" sections show how Unsemantic can be used with responsive design. The "Browser Support" section states that Unsemantic supports all major browsers. A note at the bottom indicates that the site might be a mistake for Unsemantic's arch nemesis.

<https://unsemantic.com/>

Grid structure

Main body:
Mix of 2x and 3x
columns

Alternating row
types



Title area outside the grid

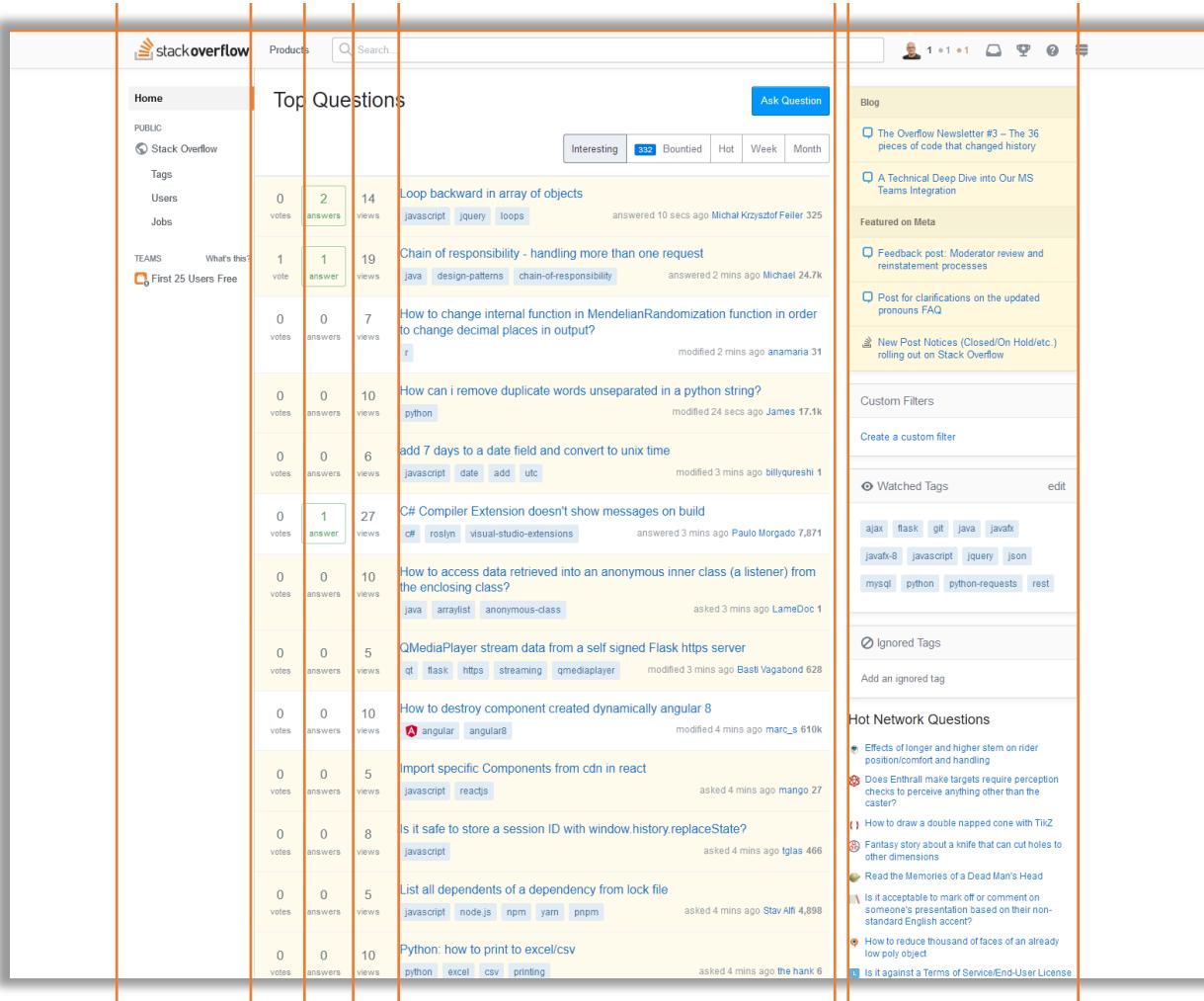
Right column for other types of articles

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

Phone Number: Learn more

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

Weekend Delivery: Select your preference ▾

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

Oppure ritira 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 Italia ▾

Nome e cognome

Indirizzo
Via e numero civico

Scala, piano, interno ecc. (Opzionale)

Città

Provincia

Codice postale

Numero di telefono
Può essere utilizzato per aiutare consegna

Aggiungi istruzioni di consegna

Consegna nel fine settimana Seleziona la tua disponibilità ▾

Aggiungi indirizzo

Some guidelines

- 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

Colors...

The collage consists of three screenshots from the [LINGSCARS.com](http://LINGS CARS.com) website, each featuring a different background or graphic overlay, all set against a vibrant, multi-colored paisley pattern.

Screenshot 1: A screenshot of the website's homepage. It features a large banner with a woman on a motorcycle, a video player showing a news segment about Ling Valentine, and a sidebar with links like "I AM LING YOU CAN TRUST ME Menu" and "CARS A-Z".

Screenshot 2: A screenshot of a promotional page for car leasing deals. It includes sections for "MY BEST SELLING CAR LEASING DEALS!", "500 IDEAS!", and "NICOLE...PAPA!". It also shows small images of various cars and social media sharing options.

Screenshot 3: A screenshot of a page showing customer deliveries. It lists "1 DELIVERY TODAY" (Ford Ka+ to Arthur ATTLEBOROUGH, NR17) and "21 DELIVERIES IN LAST WEEK" (Renault Captur to Cath PONTEFRAC, WF81, etc.).

Top Center Text: "I live inside my car leasing website all day Monday to Friday 8am-6pm. I lease the cheapest PCP and contract hire cars in the UK! - I am Ling, accept no substitutes"

Top Center Logo: **LINGSCARS.com** with a British flag icon.

Top Center Subtext: Leader of the Pack - The UK's favorite car leasing website!

Top Center Subtext: 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 Sign: A small "Stop" sign icon.

Text in Screenshot 2: "Believe it or not, this Gateshead-based website, featuring Mrs Ling jiggling on her motorbike, is one of the biggest online drivers of car sales in Great Britain" 25th July 2017

Text in Screenshot 2: "Leader of the Pack" and "[Ling Valentine is] Britain's **BIGGEST** individual seller of new cars."

Text in Screenshot 2: "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" February 2017 **theguardian**

Text in Screenshot 3: "75 CUSTOMERS IN 'PROPOSAL'" and "129 CUSTOMERS IN 'ORDER'"

Page Number: 55

Colors

- Be careful, don't 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

Example

The image displays two side-by-side screenshots of the Stack Overflow homepage, specifically the 'Top Questions' section. Both screenshots show the same list of questions, but the content on the right is blurred, illustrating how visual perception can differ between the original and a blurred version of the same information.

Left Screenshot (Original):

- 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 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:**
 - ajax, flask, git, java, javafx, javascript, jquery, json, 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
 - Does Entrail make targets require perception checks to perceive anything other than the caster?
 - How to draw a double napped cone with TikZ
 - Fantasy story about a knife that can cut holes to other dimensions
 - Read the Memories of a Dead Man's Head
 - Is it acceptable to mark off or comment on someone's presentation based on their non-standard English accent?
 - How to reduce thousand of faces of an already low poly object
 - Is it against a Terms of Service/End-User License

Example

The image displays two side-by-side screenshots of the Politecnico di Torino website. Both screenshots show the same layout with a top navigation bar featuring five main categories: "SCOPRIRE L'ATENEO", "DIDATTICA E STUDENTI", "IL MONDO DELLA RICERCA", "INNOVAZIONE PER LE IMPRESE", and "CAMPUS INTERNAZIONALE". Below this is a large banner for the "festival della TECNOLOGIA" in Torino, from November 7-10, 2019, with the tagline "Tecnologia è Umanità".

The key difference between the two screenshots is the color of the navigation bar. In the left screenshot, the navigation bar has a dark blue background. In the right screenshot, the navigation bar has a black background, and the entire page content is also rendered in grayscale, while the original colors are preserved in the banner area.

Left Screenshot (Normal View):

- Top Bar:** ITA | ENG | Login | argomenti o persone
- Navigation:** SCOPRIRE L'ATENEO, DIDATTICA E STUDENTI, IL MONDO DELLA RICERCA, INNOVAZIONE PER LE IMPRESE, CAMPUS INTERNAZIONALE
- Banner:** festival della TECNOLOGIA, TORINO, 7-10 NOV 2019, Tecnologia è Umanità
- Content Area:** Eventi (Walking Beyond, Network dynamics, OptArch2019), Avvisi e Scadenze (Comitato Leonardo, AI4CH, Progetti resilienti, Wireless charging)
- Accesso Rapido:** Apply@PolTo, Iscrizioni online, Orientamento, Corsi di studio, Orario delle lezioni, Tasse e riduzioni, Dottorato di ricerca, Dipartimenti, Centri interdipartimentali, Per le imprese, Servizi web Amministrazione, Sedi e mappe, Concorsi e selezioni, PoliToComunica, Rassegna stampa, Alumni

Right Screenshot (Grayscale View):

- Top Bar:** ITA | ENG | Login | argomenti o persone
- Navigation:** SCOPRIRE L'ATENEO, DIDATTICA E STUDENTI, IL MONDO DELLA RICERCA, INNOVAZIONE PER LE IMPRESE, CAMPUS INTERNAZIONALE
- Banner:** festival della TECNOLOGIA, TORINO, 7-10 NOV 2019, Tecnologia è Umanità
- Content Area:** Eventi (Walking Beyond, Network dynamics, OptArch2019), Avvisi e Scadenze (Comitato Leonardo, AI4CH, Progetti resilienti, Wireless charging)
- Accesso Rapido:** Apply@PolTo, Iscrizioni online, Orientamento, Corsi di studio, Orario delle lezioni, Tasse e riduzioni, Dottorato di ricerca, Dipartimenti, Centri interdipartimentali, Per le imprese, Servizi web Amministrazione, Sedi e mappe, Concorsi e selezioni, PoliToComunica, Rassegna stampa, Alumni

Palettes

Allegato 1

ABACO COLORI POLITO

BLU

PANTONE



288 CVP

CMYK



100/80/0/30

90%



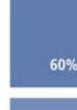
90%

80%



80%

70%



70%

60%



60%

50%



50%

ARANCIO

PANTONE



ORANGE 021

137 CVP



0/70/90/0

130 CVP



0/60/90/0

123 CVP



0/40/90/0

0/30/90/0



0/30/90/0

0/30/100/0

0/30/100/0

130 CVP

0/40/100/0

0/30/100/0

0/30/100/0

COMBINAZIONI

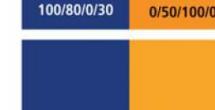
CMYK



100/80/0/30



0/70/100/0



100/80/0/30



0/60/100/0



100/80/0/30



0/50/100/0



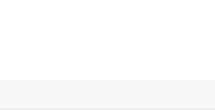
100/80/0/30



0/40/100/0



100/80/0/30



0/30/100/0

0/30/100/0

ColourLovers



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.

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[CONNECT WITH COLOURLOVERS](#)

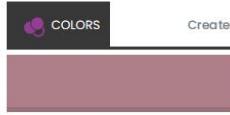
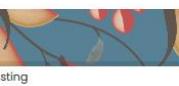
[Follow @COLOURlovers](#) 1.59M followers

LOVERS PEEK

- 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 beautifull!!!
- 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

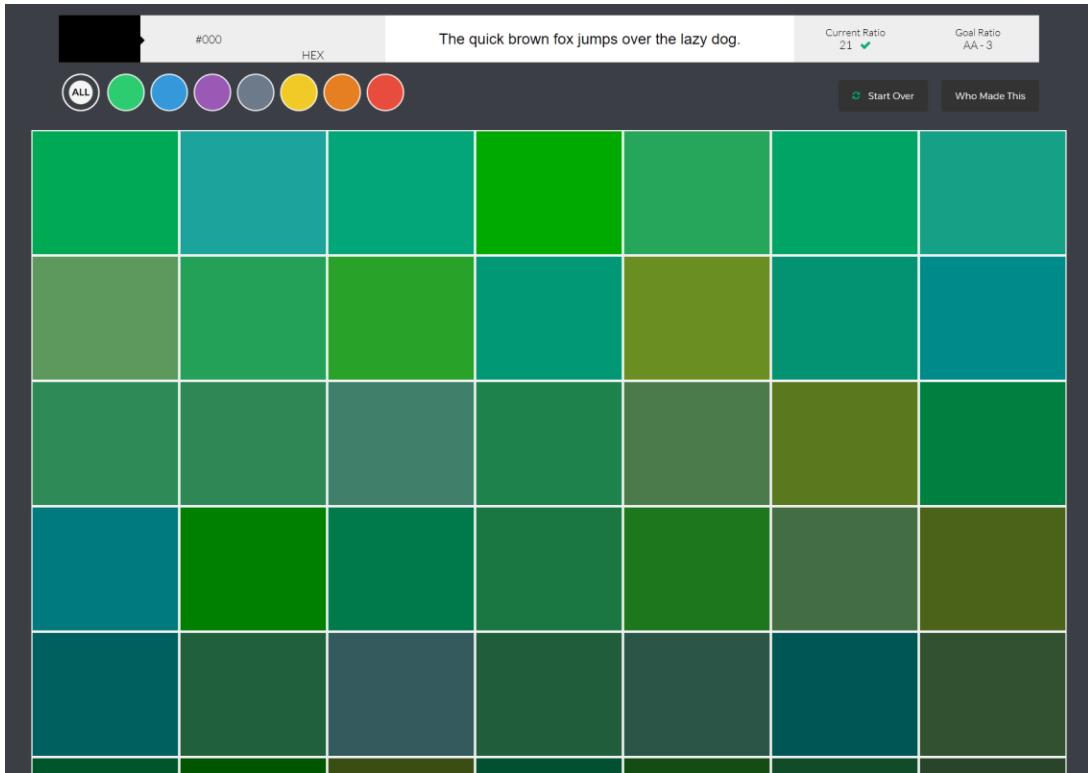
ALL WEDDING HOME FASHION WEB PRINT CRAFT DIGITAL ART

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0 Comments
- 
How to Become a Full-Time Creative and Do What You Love
0 Comments
- 
Colors, Human Growth Hormones, and Creativity
0 Comments
- 
Create +
Nineteen
by Júlia Freire
0
- 
Create +
try
by Anomalin
0
- 
Create +
garden palette 2
by macarver
0
- 
Create +
PodCasting
by 3sisters
0
- 
Create +
light gray purple
by macarver
0
- 
Create +
slate purple
by macarver
0

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

Color contrast



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

<http://colorsafe.co/>

Example

- Colors needing an explanation legend
- Time intervals are shaded with 2 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

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: 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

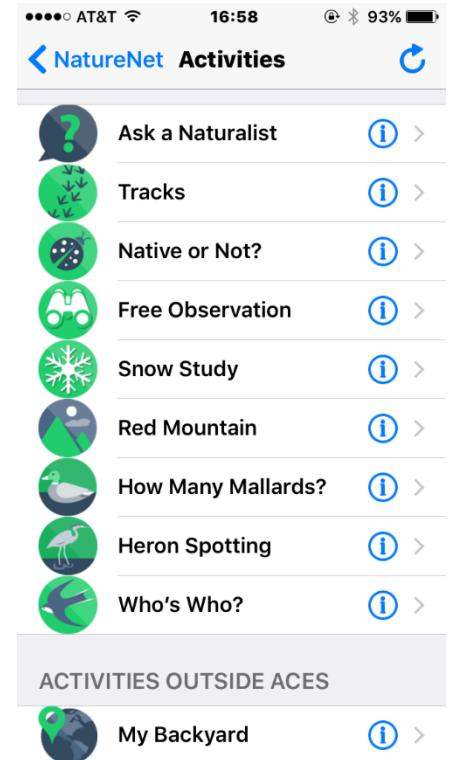
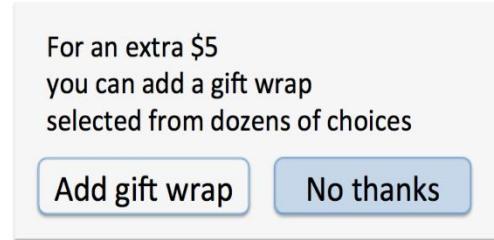
«Informavores» must quickly find the information they need

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

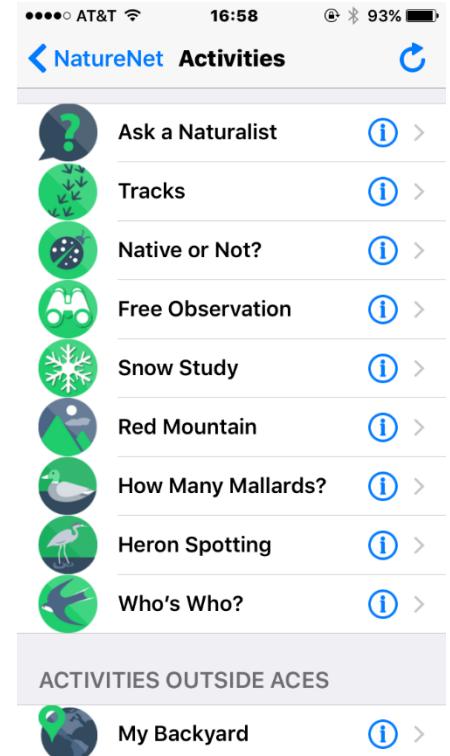
- Menu bars, pop-up menus, toolbars, palettes and ribbons
- Shortcuts and gestures for rapid interaction
- Long lists
- Linear versus simultaneous presentation



Navigation by selection

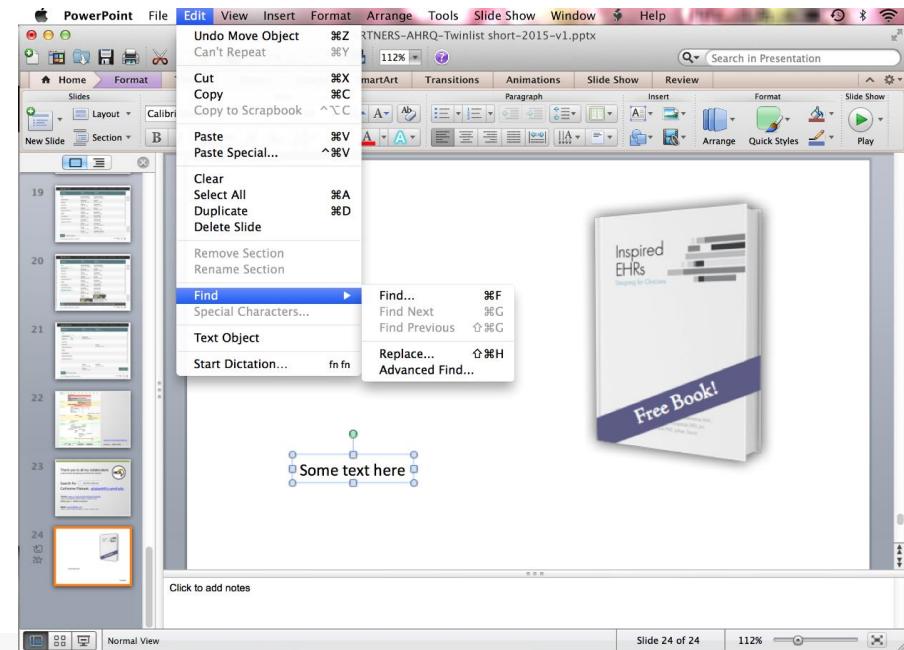
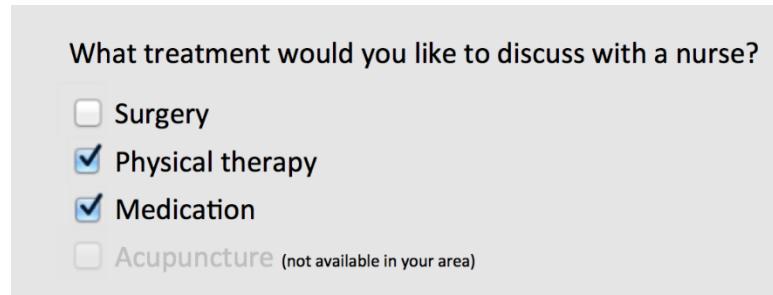
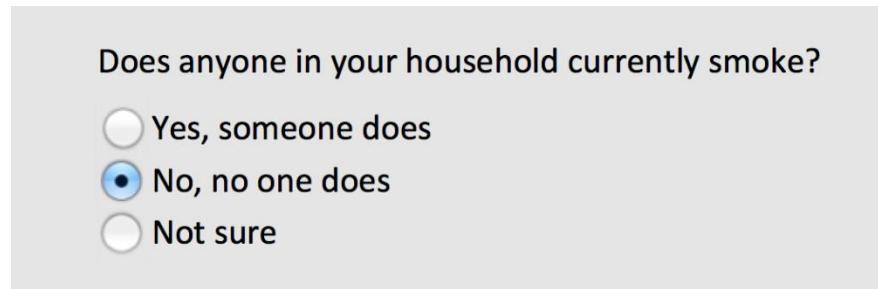
- Menu bars, pop-up menus, toolbars, palettes and ribbons
- **Shortcuts and gestures for rapid interaction**
- Long lists
- Linear versus simultaneous presentation

- 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 homepage with a complex navigation menu at the top. The menu items include: Missions, Galleries, NASA TV, Follow NASA, Downloads, About, NASA Audiences, and a Search bar. Below the menu, there is a main content area featuring several news stories and images. One prominent story is about the "One-Year Crew" on the International Space Station. Other stories include "The Martian" Director Ridley Scott Discusses NASA's Journey to Mars, an "Eclipse" story, and various images from Mars and space. The footer contains links to National Aeronautics and Space Administration, NASA Official: Brian Dunbar, and standard government links like No Fear Act, FOIA, Privacy, Office of Inspector General, Agency Financial Reports, and Contact NASA.

The screenshot shows the NASA TV website homepage. The menu is much simpler, featuring the NASA logo, a search bar, and a navigation bar with icons for Home, NASA TV, and other sections. The main content area displays a video player showing two astronauts working on a space station, with the caption "One-Year Crew Halfway There". Below this, there is another video player showing three people in a laboratory setting, with the caption "SDO Catches an Earth-Moon Double Photobomb".

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 [>= 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

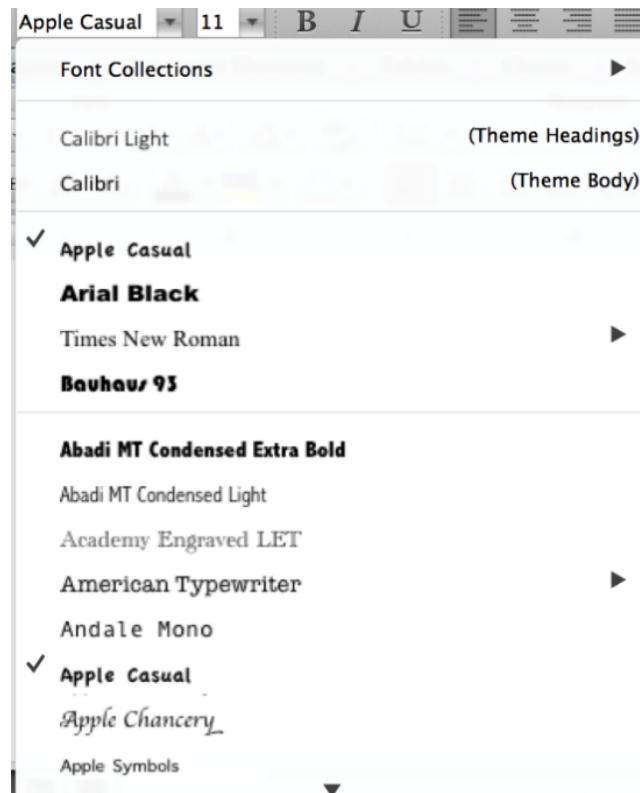
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		14 Set 2020 - 18 Set 2020						
		Lunedì 14 Set 2020	Martedì 15 Set 2020	Mercoledì 16 Set 2020	Giovedì 17 Set 2020	Venerdì 18 Set 2020		
		09:00 - 13:00 - prenotazioni: 36/36	09:00 - 13:00 - prenotazioni: 33/36	09:00 - 13:00 - prenotazioni: 36/36	09:00 - 13:00 - prenotazioni: 32/36	09:00 - 13:00 - prenotazioni: 35/36		
09:00								
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...
 - Don't 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, a large blue banner reads 'Teaching portal'. The page is organized into several colored boxes containing links to various services:

- 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 011-897965), '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), 'PoliTO App' (with logo), and social media icons for YouTube, Facebook, and Twitter. A copyright notice at the bottom right states: © Politecnico di Torino Corso Duca degli Abruzzi, 24 - 10129 Torino, ITALY.

Example



The screenshot shows a search results page for 'Architecture' under the 'Bachelor's degree programmes in ARCHITECTURE' section. It lists various degree programmes such as Architecture 1st level, Architecture 2nd level, Architecture 3rd level, Architecture 4th level, and Architecture 5th level, along with their specific locations and class codes.

Exam dates	Course finder	C.L.A. Language Center	Course Timetables
Thesis proposals	Support services	Research Labs	Campus maps
Student teams	Register of student societies	Libraries	Study rooms
Student projects	Donations (5X1000)	University residences	Free room finder
Mobility and Cultural	Sports activities	Polito Wi-Fi	

This screenshot shows the main interface of the Apply@polito website. It includes sections for Bachelor Italian students, M.S. Italian students, Students with a foreign qualification, Ph.D., Specializing master, Exchange programmes, and State exams. There are also links for News - Events, Online application form, Privacy - Information, and I forgot your password?

The homepage features sections for STUDENTS & GRADUATES, EMPLOYERS, EVENTS, and HIGHLIGHTS. It highlights a 'TECH TALK VISHAY L'evoluzione della E-Mobility' event on November 7, 2019. There are also video galleries for 'LA BELLEZZA DI FARE IMPRESA' and 'Career Day 2018'.

Human Computer Interaction

Teaching portal

The Teaching portal interface is divided into several sections: Generale (General), Studenti (Students), Area dell'Architettura (Architecture Area), and Area dell'Ingegneria (Engineering Area). Each section contains various sub-links related to student services, news, events, and notices.

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] [FR] [IT] [ES] [PT]

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

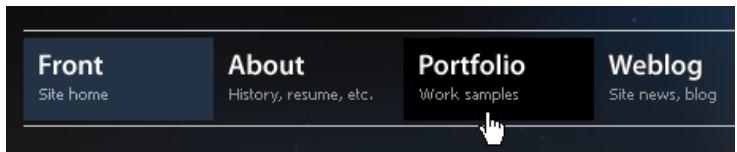
- Icons facilitate recognition over recall
 - When they are consistently used, and frequently visible
- Redundant coding helps recognition and memorization
 - Icon + Text + Tooltip + Context



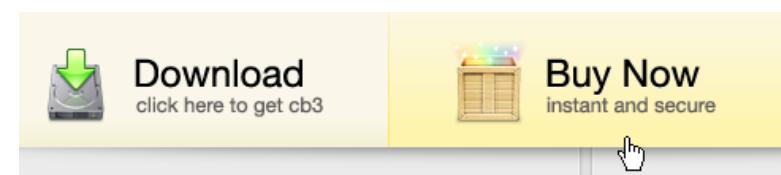
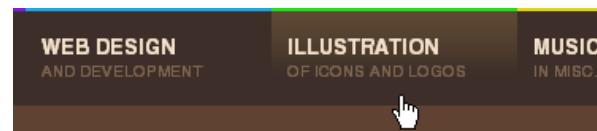
Links

- 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 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 mouse cursor is hovering over the 'Who We Are' link.



A screenshot of a website navigation bar. It lists several services: 'Newsletter' (Free newsletter), 'Store' (Maximize your ministry), 'Events' (Attend an event near you), 'Podcast' (Free audio training), and 'Coaching' (Networks for Worship Leaders). A mouse cursor is hovering over the 'Events' link.

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 [?](#)

* 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:

- Text input fields let you input text
- Checkboxes: NonFederal (99), Federal (57)
- Radio buttons: Yes, No
- Dropdown menu: Find your state or... Go
- List boxes: Are like dropdowns, But they let you make multiple selections, Like checkboxes do
- General Settings menu: General Settings, Your Profile, Sign Out
- Date pickers: SEP 18th 2010, JUN 22, Sep. 2010 calendar
- Social sharing buttons: Send, Post, Tweet
- Sliders: ON OFF
- Navigation bar: Menu Item, Messages (1), About Us
- Progress bar: This is a box
- Search bar: Navigation Crystal Clear, Navigation Menu, Navigation Soft Style, Navigation Class, Navigation Plastic
- Search bar: Enter Keywords, Search Option One, Search Option Two, Search Option Three
- Search bar: Enter Keywords, Category, SEARCH
- Search dropdown: Search, Everything, Entries, Photos, Videos, Audio
- Image gallery: Tags, Costs (72), Health Conditions (54), Improving Care (53), Prevention (50), Rights, Protections and Benefits (135), Insurance Coverage (141)
- Page navigation: Previous, Next, 1 2 3 4 5 6 7 8 9 10, ..., 246, 247, Next
- Page navigation: < Prev, 1 2 3 4 5 6 ..., 33, 34, Next
- Form buttons: Clean, Fresh, Modern, Unique, X, +
- Progress bar: 1. Skills, 2. Location, 3. Finish
- Step navigation: 1 Step Select your plan, 2 Step Select your plan, 3 Step Select your plan

<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

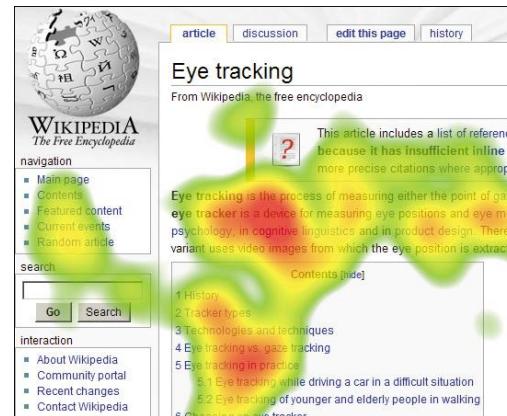
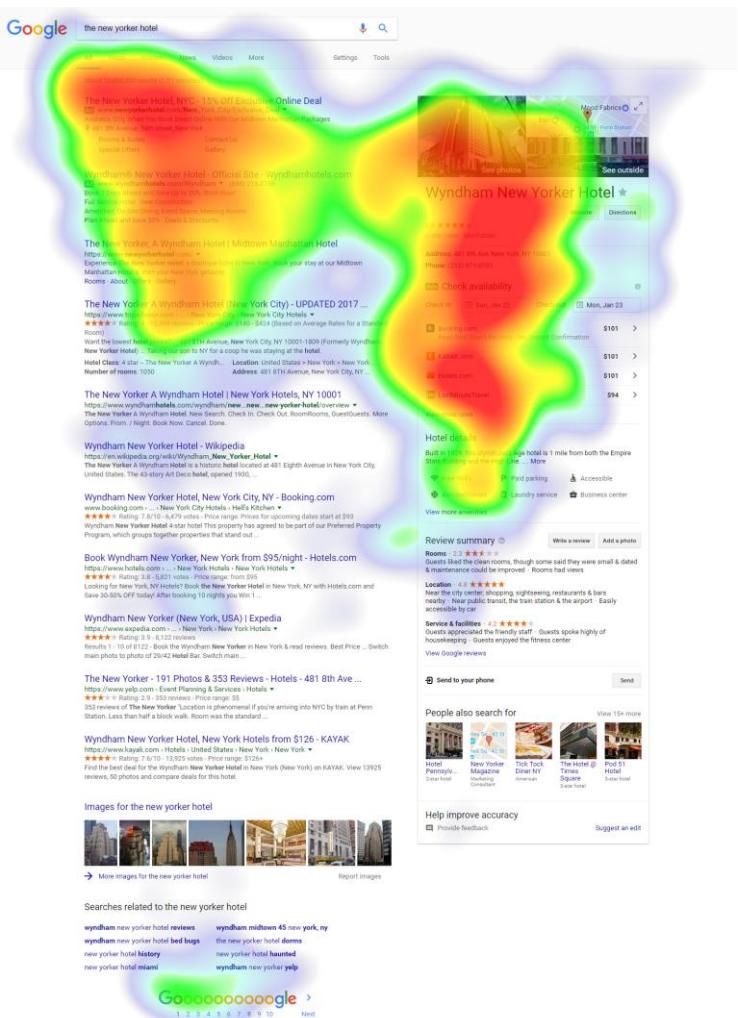
Location on the page

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

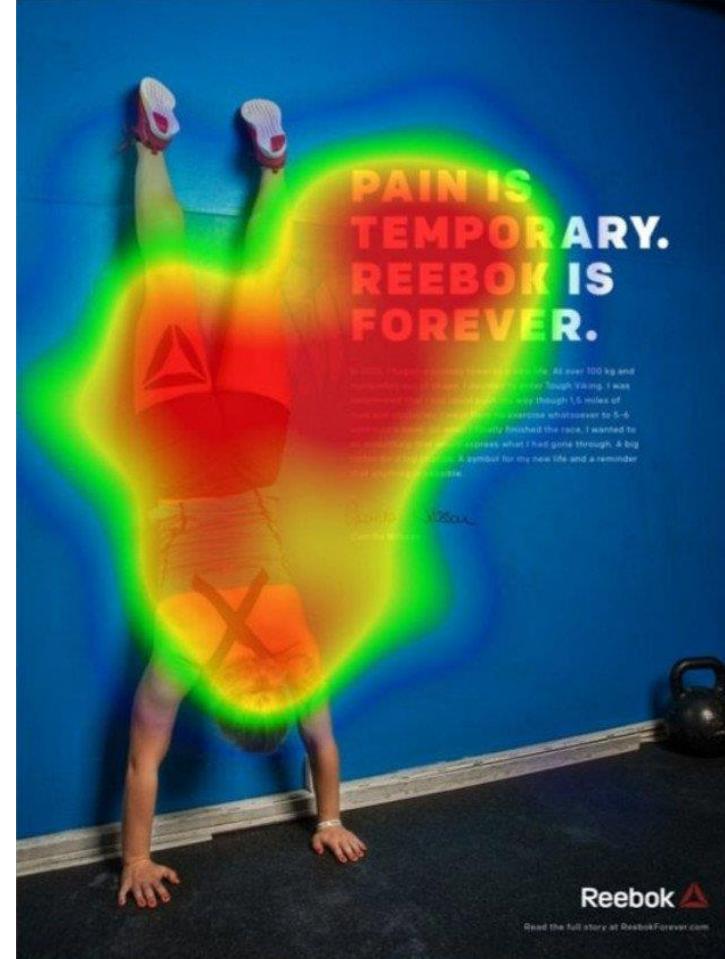
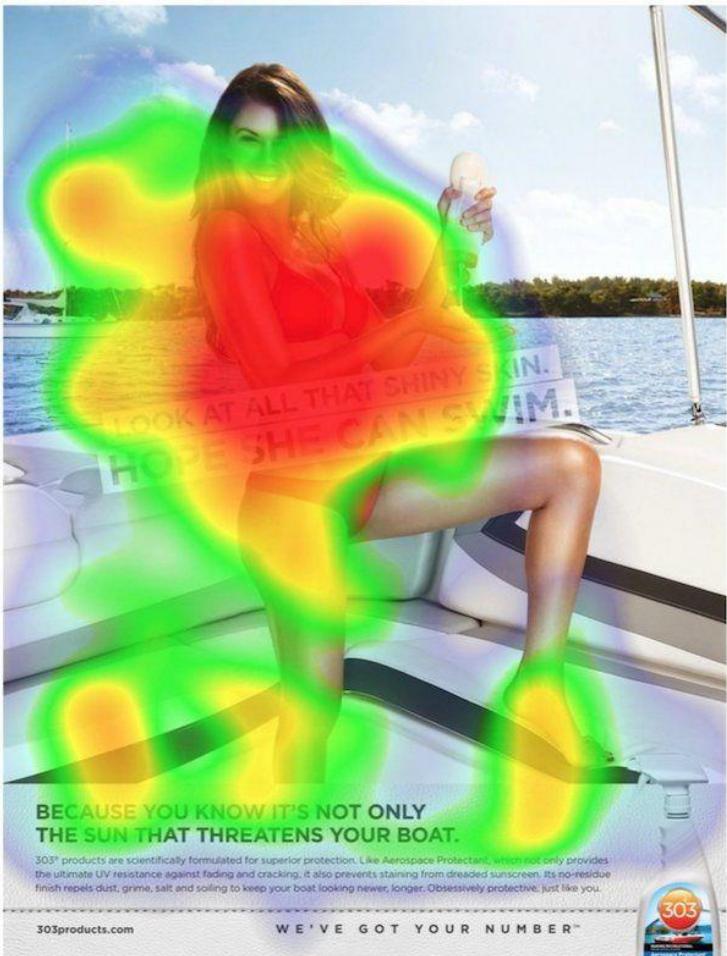
Search “eye tracking heat map” and see the major patterns

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

F-shaped pattern



Did anyone ever look at the product name?

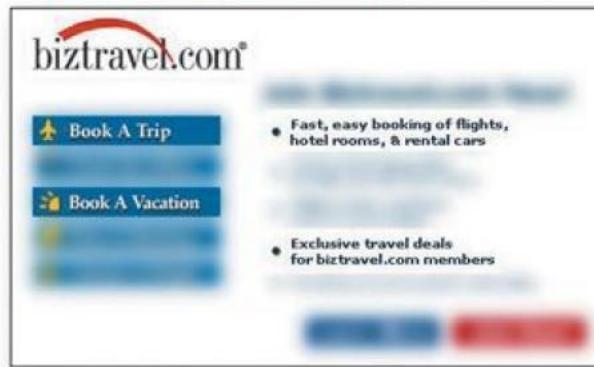


Scanning

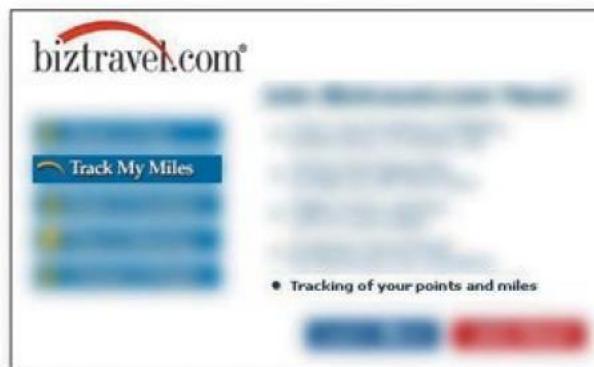
WHAT DESIGNERS BUILD...



WHAT USERS SEE...



I want to
buy a
ticket.



How do I
check my
frequent
flyer miles?

Experiment

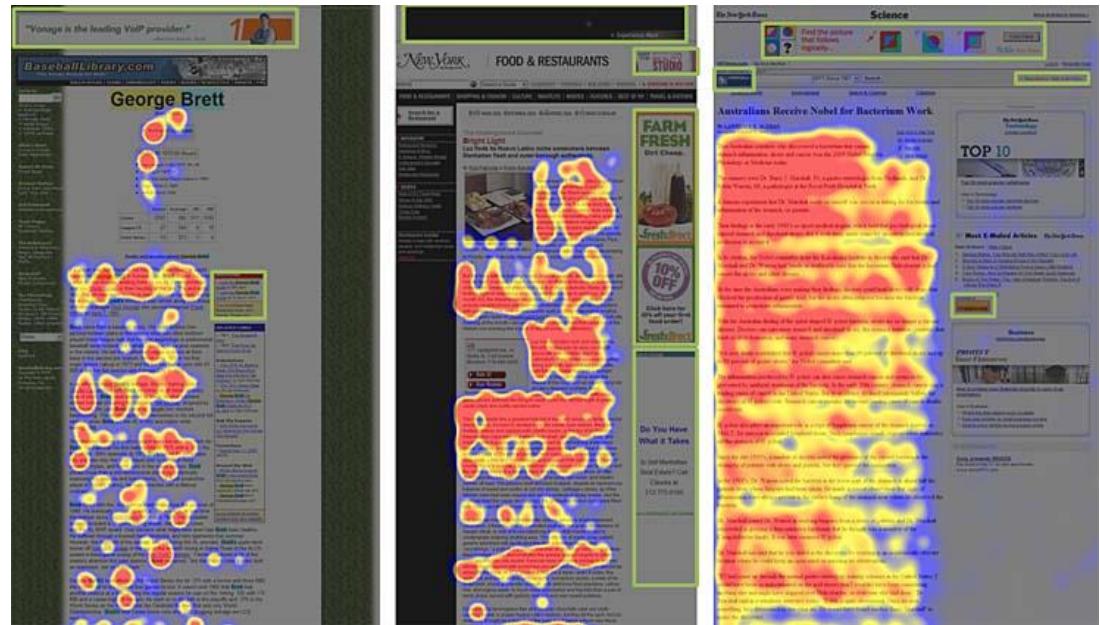
Site Version	Sample Paragraph	Usability Improvement (relative to control condition)
Promotional writing (control condition) using the "marketese" found on many commercial websites	Nebraska is filled with internationally recognized attractions that draw large crowds of people every year, without fail. 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, don't 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

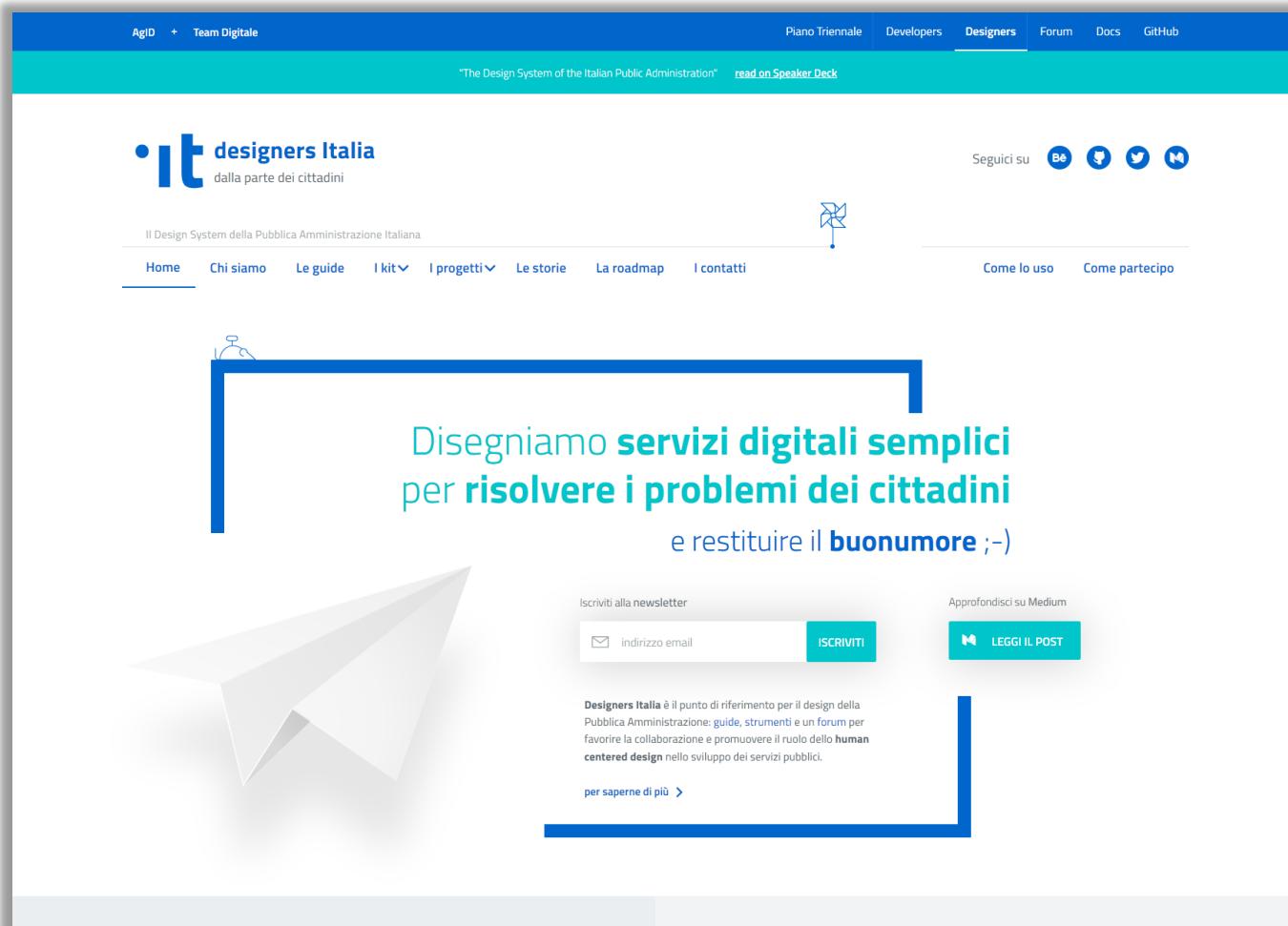
- The brain learns to avoid uninteresting content
- Banners and Advertisements are recognized subconsciously (by their appearance) and are never considered
 - Ads also “poison” adjacent elements
- Lesson learned: never create a message / title / warning / etc. that might look like an ad. (Faux ads)



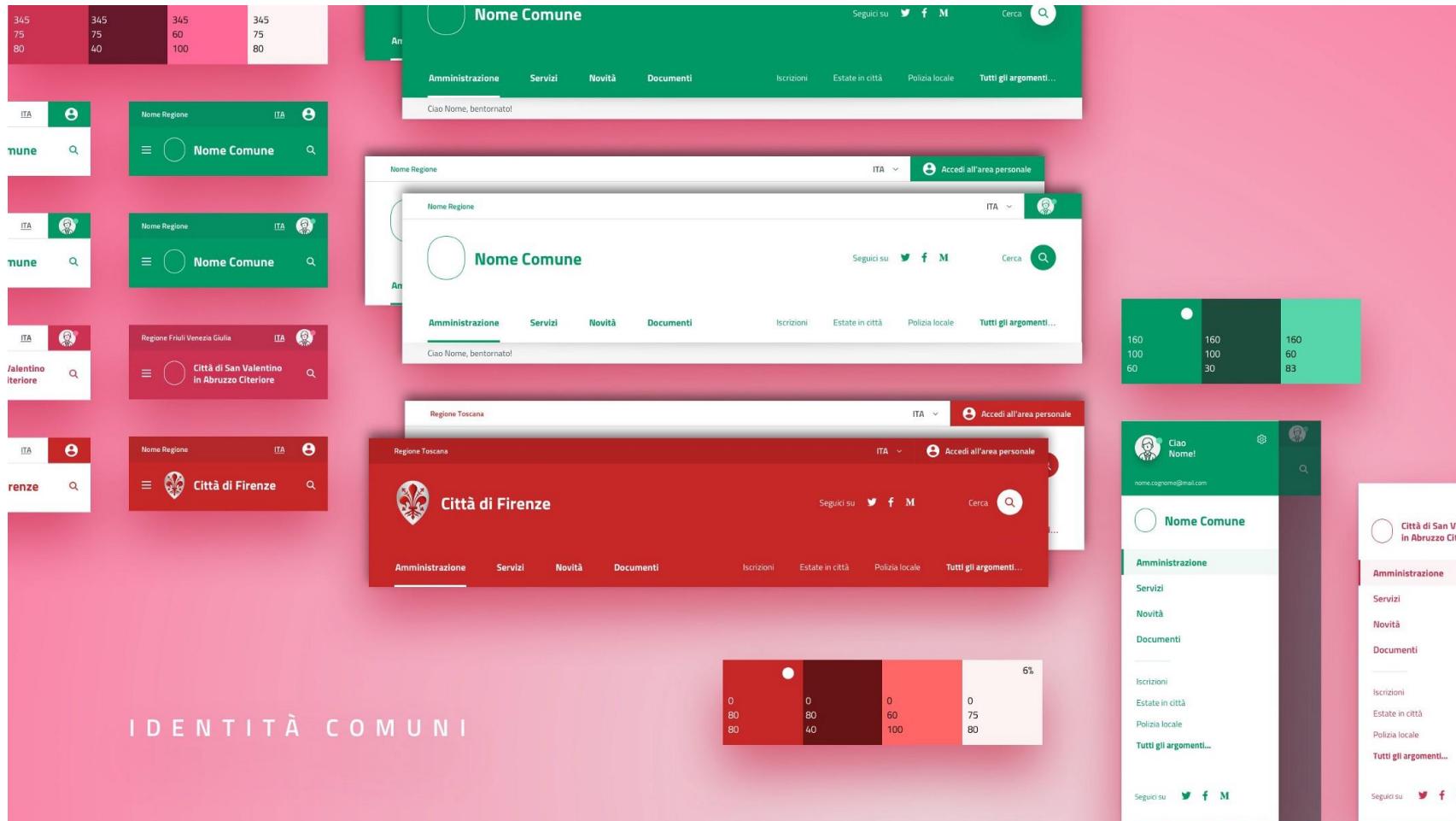
The Design System of the Italian Public Administration

An example toolkit for visual design (targeted at Public Administration websites and services, mainly)

<https://designers.italia.it/>

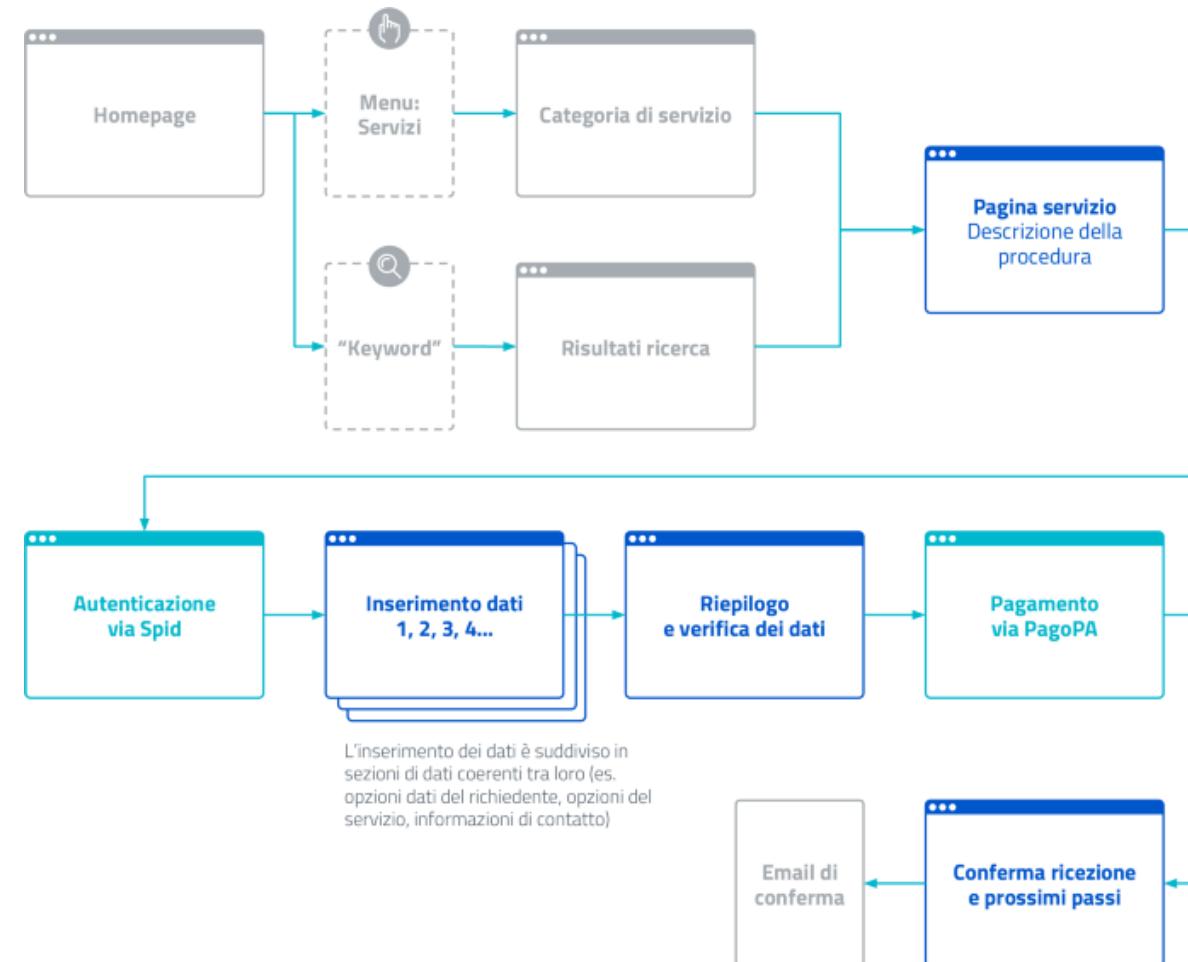


Application of the Design Kit: a City Website



<https://medium.com/designers-italia/un-progetto-non-comune-175f1fe8cab5>

A City Website: standard navigation path



A City Website: example page

The screenshot displays a city website interface for "Nome Comune".

Header: Shows the city name "Nome Comune" and a search bar.

Main Content: The main area shows the title "Iscrizioni Asili Nido e Sezioni Primavera" and a brief description: "Come iscrivere i propri figli agli Asili Nido e alle Sezioni Primavera Comunali o nelle strutture accreditate". It includes filters for "Età bambini" (0-3 anni, 3-6 anni, 6-12 anni) and "Argomento" (Educazione, Famiglia, Infanzia, Bambini 0-16 mesi).

Left Sidebar: A "NOTIZIE DELLA PAGINA" sidebar lists links: Chi può fare richiesta, Come iscriversi, Come avviene, Struttura e accesso, Scadenze e aggiornamenti, Casi particolari, Registri, Ulteriori informazioni.

Right Sidebar: A "Servizi" sidebar lists services: Iscrizioni e autorizzazioni (Bambini 0-16 mesi), Domande e istruzioni (Iscrizioni agli Asili Nido), Lavorare con il Comune (Informativa relativa all'iscrizione infantile, Informazioni sui servizi sociali del Comune, Attività di servizio rivolta ai dipendenti comunali e famiglie dei dipendenti), and Prenotazioni (Prenotazioni).

Footer: Features large green numbers: 58 (Numero di servizi erogati) and 14000 (Numero di richieste pervenute annualmente). It also lists other service categories: Sostegno (Sostegno), Domande e iscrizioni (Domande e iscrizioni), Autorizzazioni e concessioni (Autorizzazioni e concessioni), and Certificati e dichiarazioni (Certificati e dichiarazioni).

References

- 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



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