



# Visual Design and Fluid Navigation

Human Computer Interaction

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Academic Year 2019/2020



POLITECNICO  
DI TORINO



# Visual Design

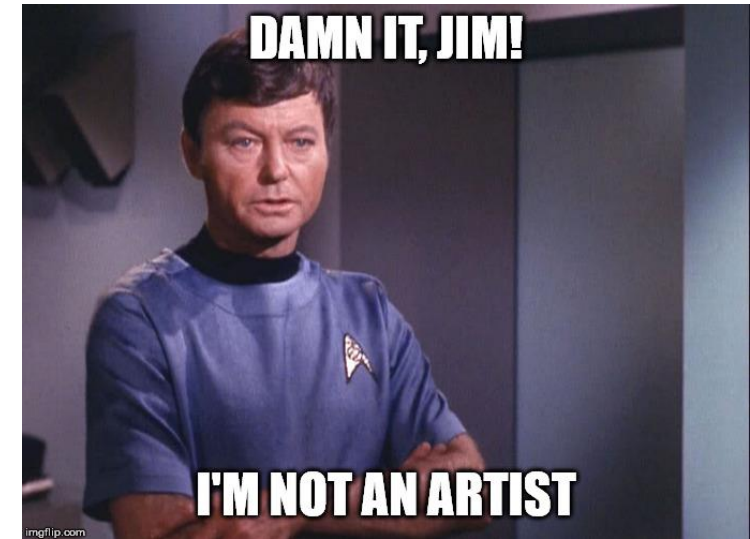
Aesthetics for helping users in understanding and navigating the UI

# 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

Basic visual design involves ...

## **Text**

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Next, font size and style differences convey hierarchy.

Finally, alignment is crucial for helping readers scan quickly.

## **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



# Recognizable page structure

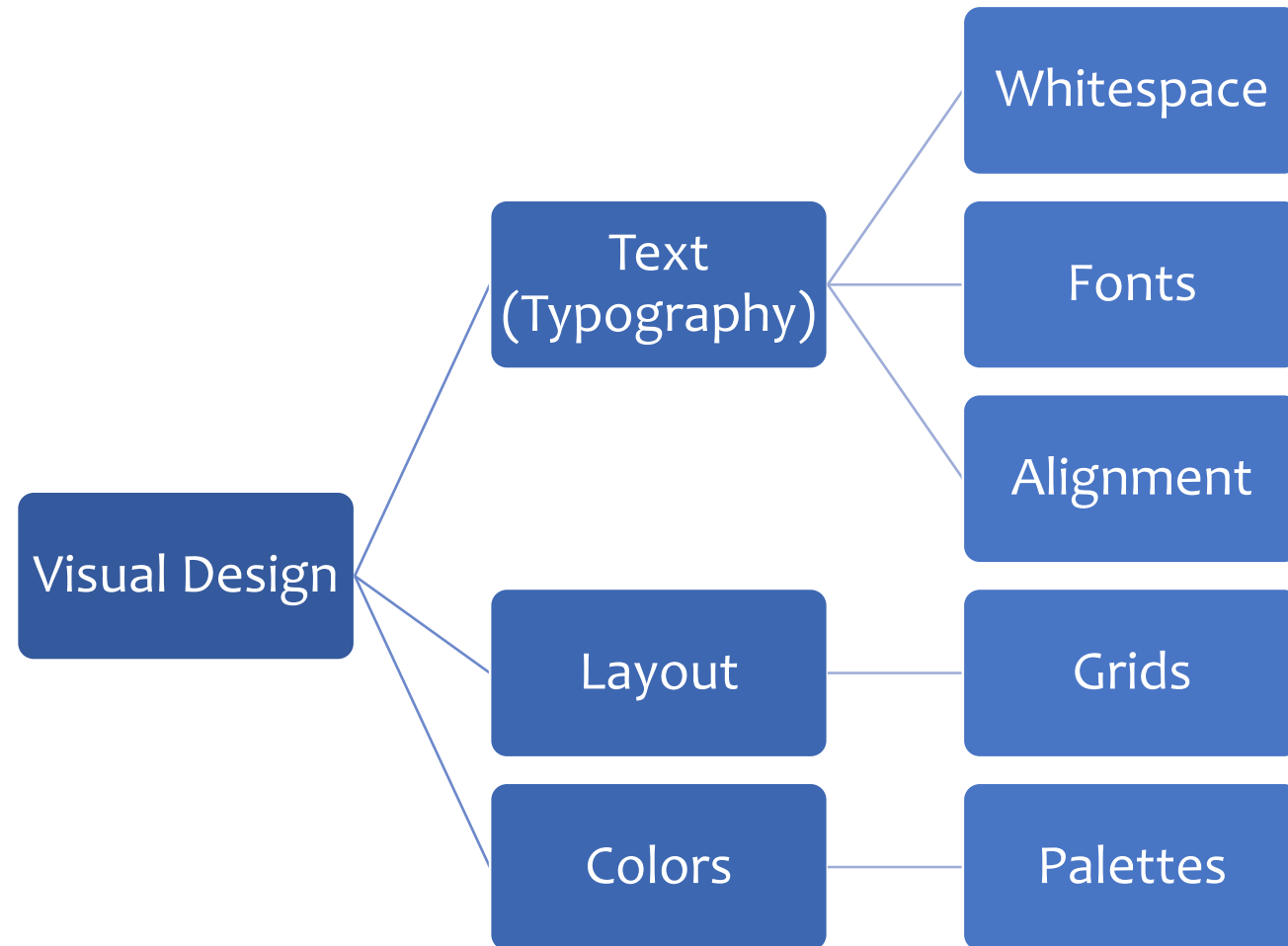
The screenshot displays the homepage of the Italian newspaper LA STAMPA. The layout is structured as follows:

- Header:** Includes the GNN logo, a NEWSLETTER link, social media icons for Twitter and Facebook, and links for ABBONATI (Subscribers) and ACCEDI (Log In).
- Navigation:** Features a MENU button, a search icon, and a main navigation bar with links for LEGGI IL QUOTIDIANO, TOP NEWS, and TUTTOLIBRI.
- Update and News Links:** Shows the date 'Aggiornato alle 22:45 - 04 novembre' and a row of news links: 'La caduta del Muro', 'Serie A', 'Siria', and 'Manovra'. Regional editions like 'TORINO' and 'EDIZIONI LOCALI' are also listed.
- Featured Articles:** A row of three article teasers with icons and titles:
  - 'I demoni di Hamilton: "Non è facile come sembra, per me è durissima"' by Stefano Mancini.
  - 'Lavorare meno per rendere di più: la ricetta funziona davvero' by Emanuela Grigliè.
  - 'Reportage Trombe d'aria, pioggia e fiumi esondati: in Liguria torna l'incubo alluvione' by Marco Menduni.
- Main Content Area:**
  - Large Article:** 'ArcelorMittal abbandona Taranto e l'ex Ilva. Scoppia la polemica. L'azienda: c'era il diritto di recesso' by Paolo Baroni. Includes an image of the ArcelorMittal logo.
  - Video Teaser:** 'LA STORIA DI GIOVANNI BELZONI IN UN LIBRO' by Marco Zatterin. 'Da Abu Simbel a Giza, l'italiano che inventò l'egittologia'.
  - Interview:** 'Intervista - Calenda: sull'Ilva di Taranto distrutto il lavoro di anni' by Paolo Baroni. Includes a photo of Matteo Renzi.
  - Industry News:** 'ArcelorMittal si tira indietro sull'Ex Ilva, ecco quanto pesa la decisione su Taranto' and 'La storia dell'acciaieria più grande d'Europa. Ecco l'Ilva dal 2012 a oggi' by Giulia Ciancaglini. Includes images of industrial plants.
  - Climate News:** 'Il surriscaldamento climatico è arrivato nel profondo delle Alpi' by Nicola Pirina. Includes a photo of a person in a red jacket in a snowy mountain landscape.
  - Other Teaser:** 'SECONDO NOI Sud svuotato e senza lavoro: lo Svinmez lancia l'allarme recessione' by Marco Sodano. Includes a photo of a factory interior.

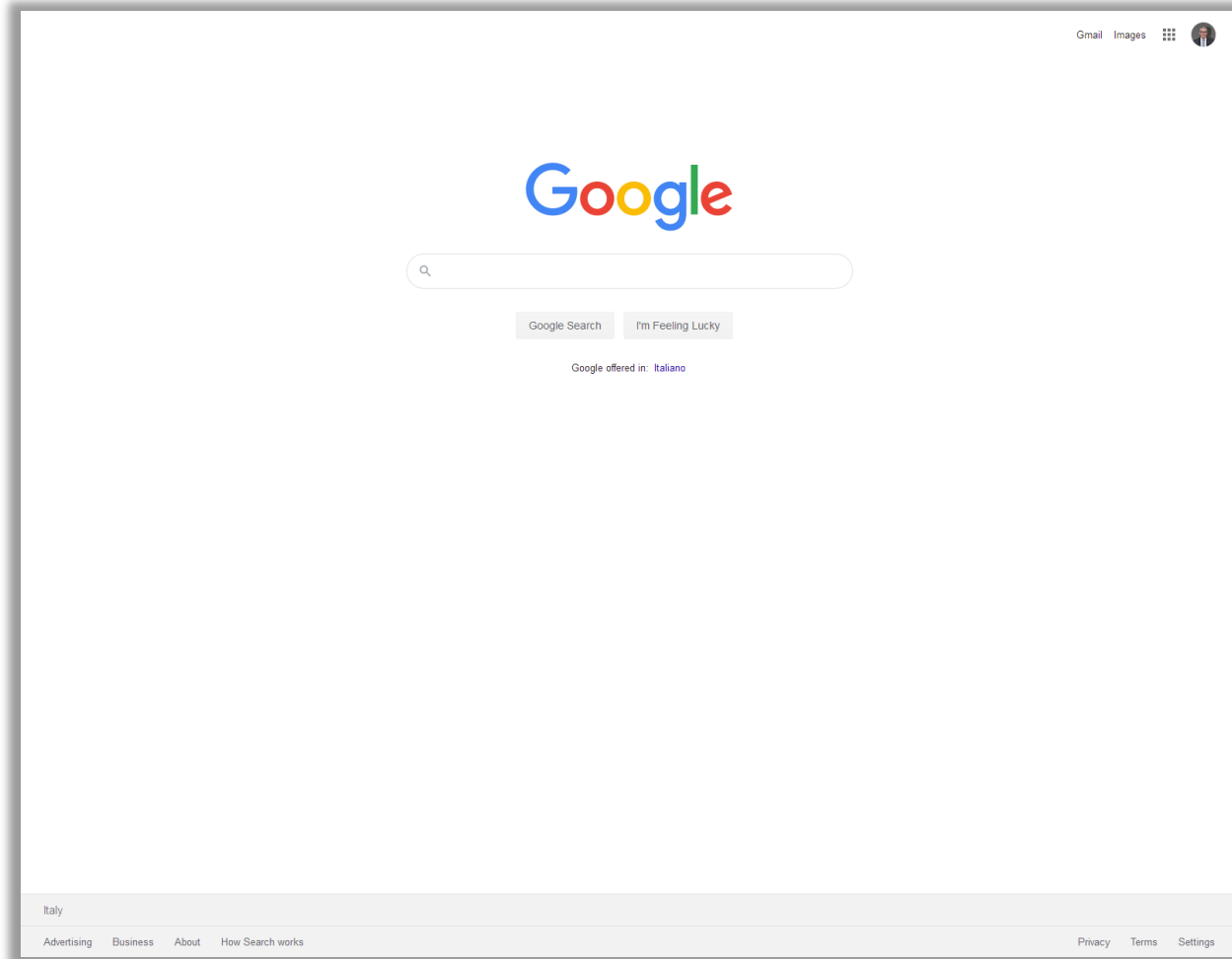
# Recognizable page structure



# Key ingredients



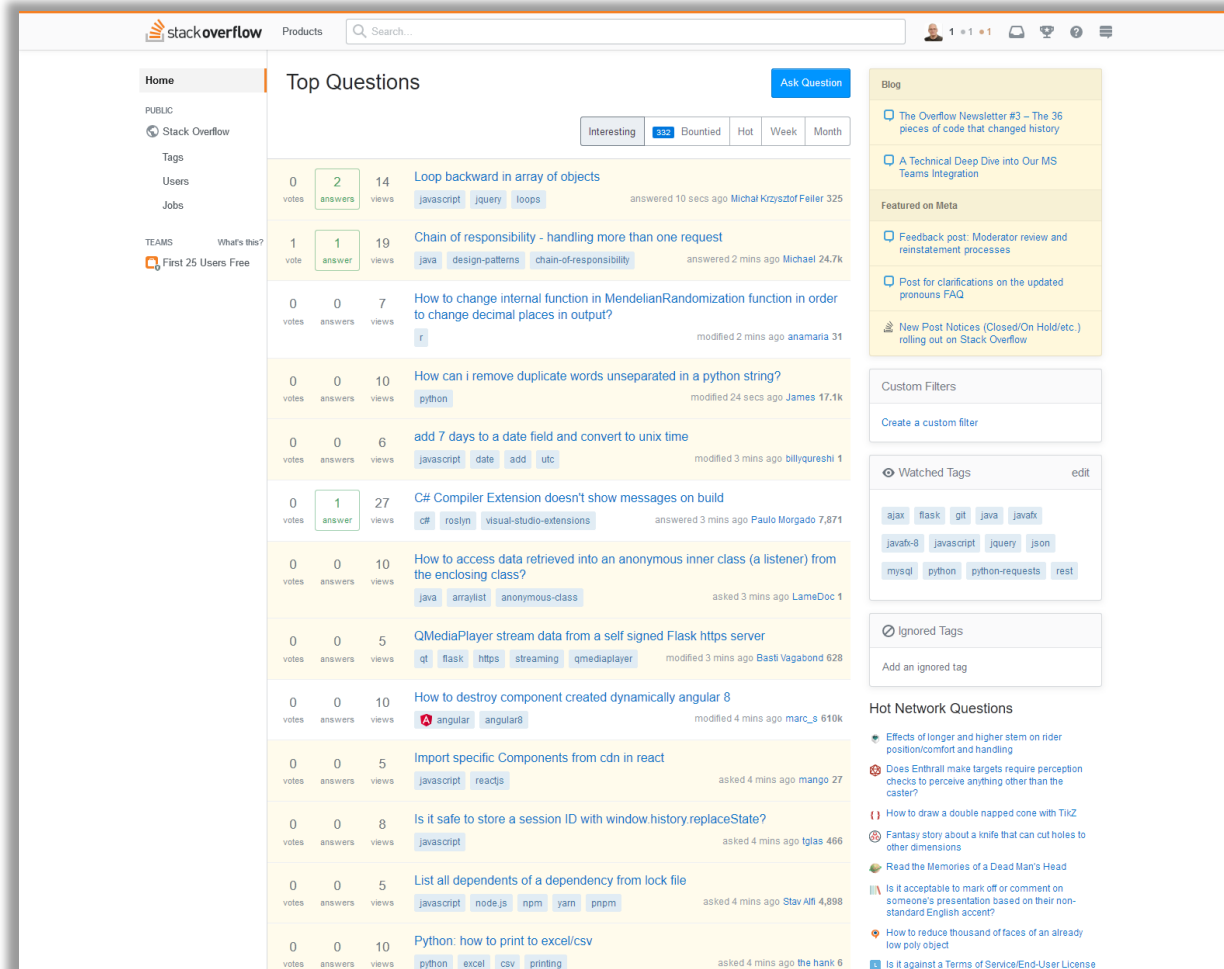
# Recognizable page structure



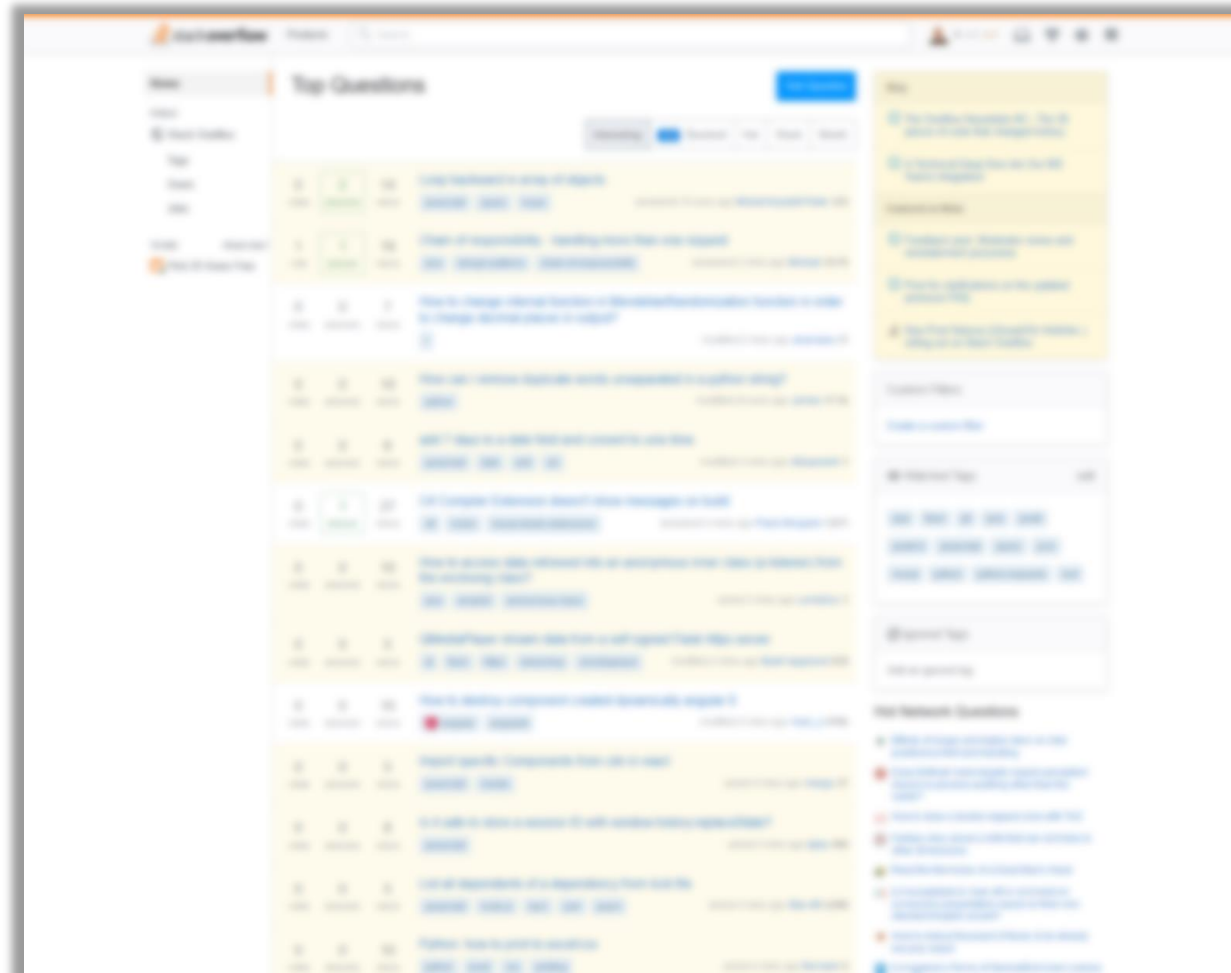
# Recognizable page structure



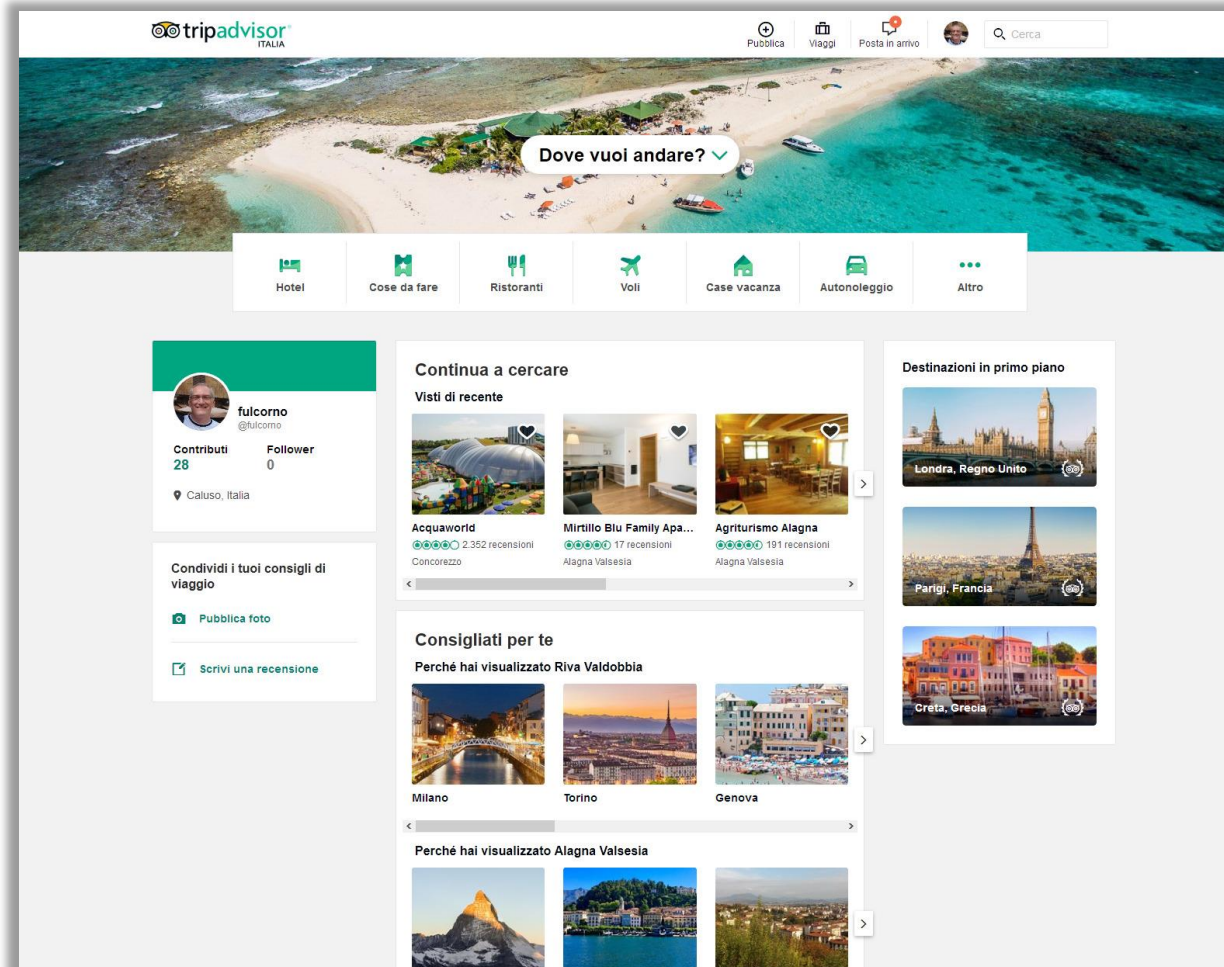
# Recognizable page structure



# Recognizable page structure



# Recognizable page structure





# Recognizable page 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*



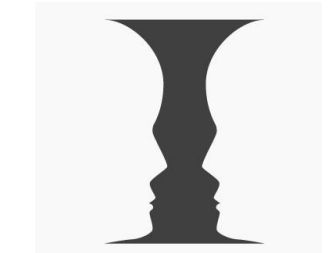
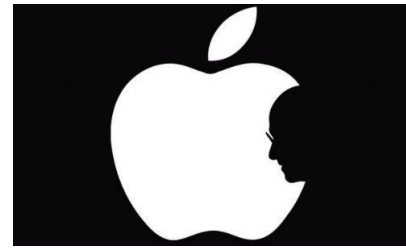
<https://www.interaction-design.org/literature/topics/gestalt-principles>

<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.

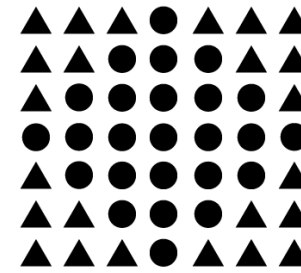
# Examples: figure-ground



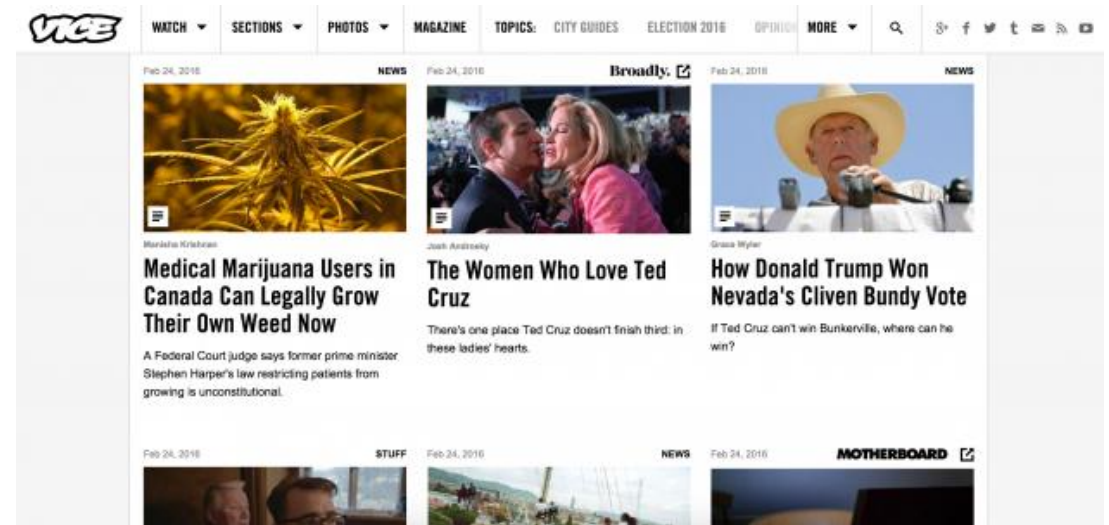
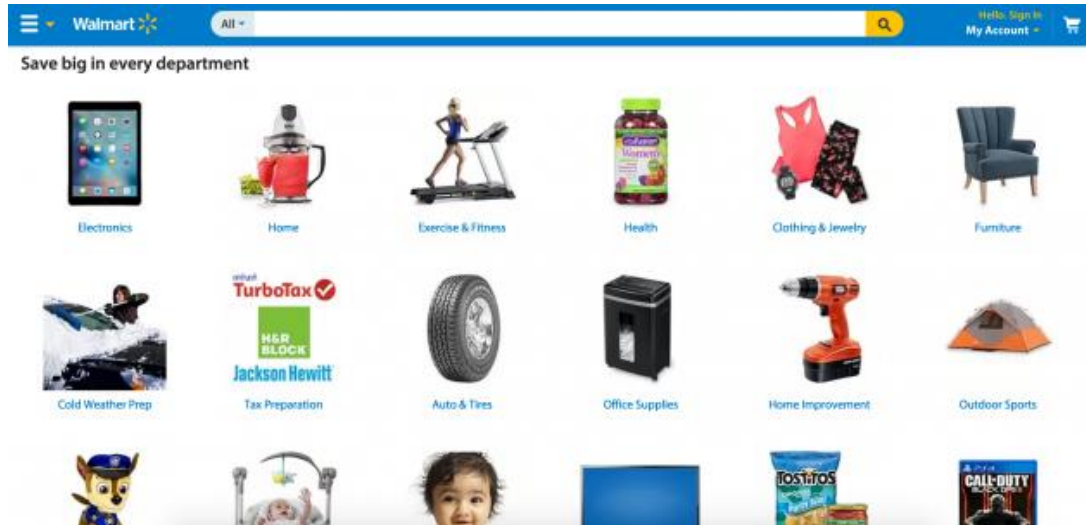
This is a screenshot of the Basecamp 3 website. The main content area features a large illustration of a person's head filled with various icons and text bubbles, with the headline "Working with other people? Struggling to keep everyone on the same page?". To the right is a sign-up form. A black arrow points from the headline area to a small black button that says "Sign up now for free below". This button is placed over the white background of the sign-up form, creating a figure-ground effect where the button is the figure and the form is the ground.

This is a screenshot of the AngelList website. The main header features the AngelList logo and the tagline "Where the world meets startups" over a background of Earth from space. On the right side, there is a navigation menu with several options: "Find a Startup Job", "Post a Job", "Raise Money Online", and "Invest in Startups". The menu items are white text on a dark background, creating a figure-ground effect where the text is the figure and the dark background is the ground.

# Examples: similarity

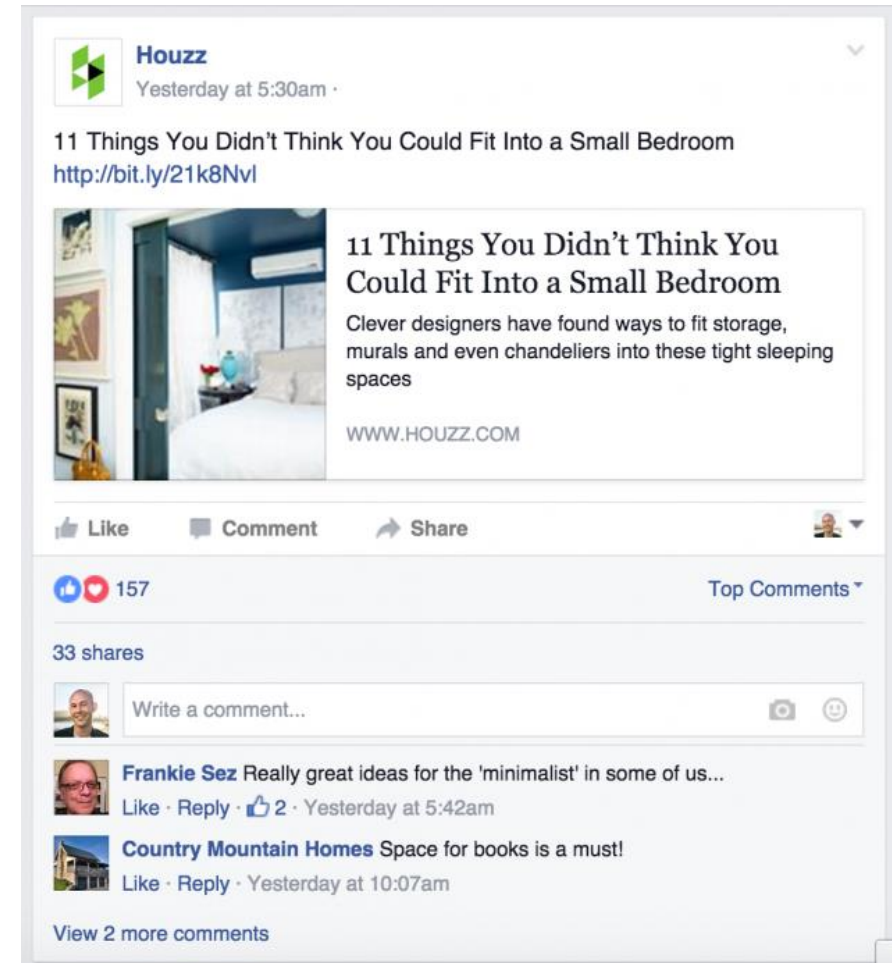
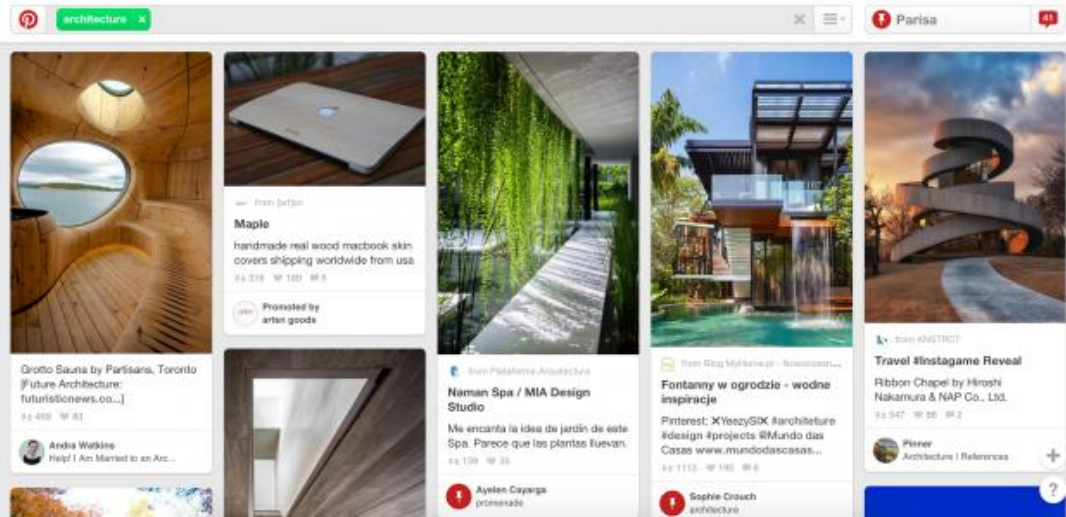
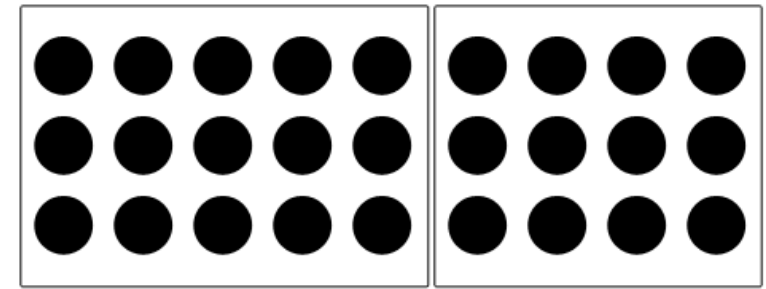


# Examples: proximity



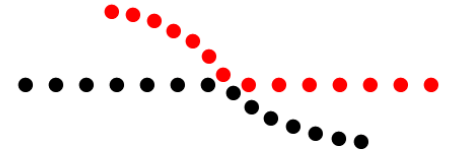
<https://www.usertesting.com/blog/gestalt-principles/>

# Examples: common region





# Examples: continuity



## Customers Who Bought This Item Also Bought

Page 1 of 20

The screenshot shows five book recommendations with their covers, titles, authors, ratings, and prices. Navigation arrows are visible on the left and right sides of the list.

Book Title	Author	Rating	Price
Crossing the Chasm, 3rd Edition: Marketing and Selling Disruptive Products	Geoffrey A. Moore	★★★★★ 72	\$12.35 ✓Prime
The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to	Eric Ries	★★★★★ 1,062	\$16.66 ✓Prime
The Innovator's Dilemma: The Revolutionary Book That Will Change the Way	Clayton M. Christensen	★★★★★ 209	\$10.06 ✓Prime
The Innovator's Solution: Creating and Sustaining Successful Growth	Clayton M. Christensen	★★★★★ 22	\$18.33 ✓Prime
How Will You Measure Your Life?	Clayton M. Christensen	★★★★★ 583	\$15.06 ✓Prime



### Step 1

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



### Step 2

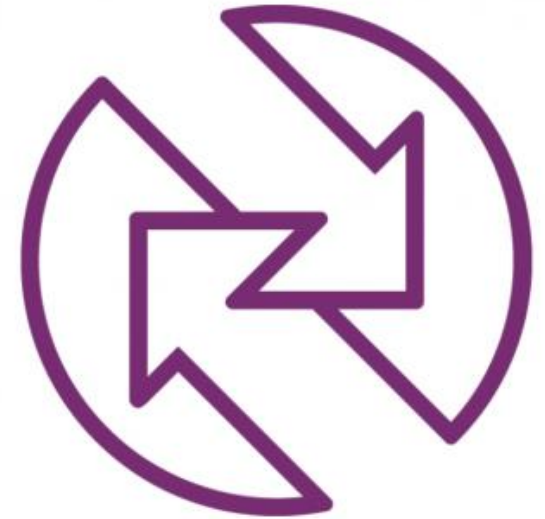
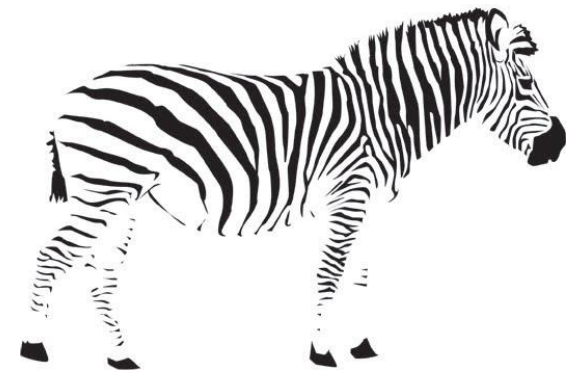
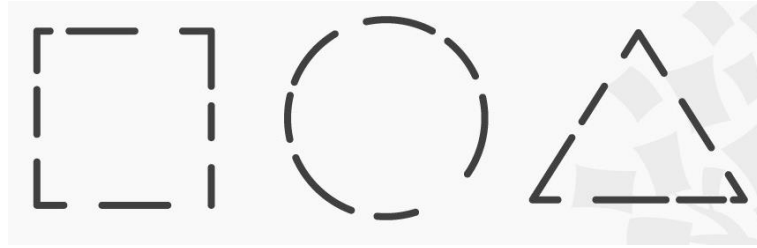
Our friendly servers organize your food for delivery - hot and ready to eat!



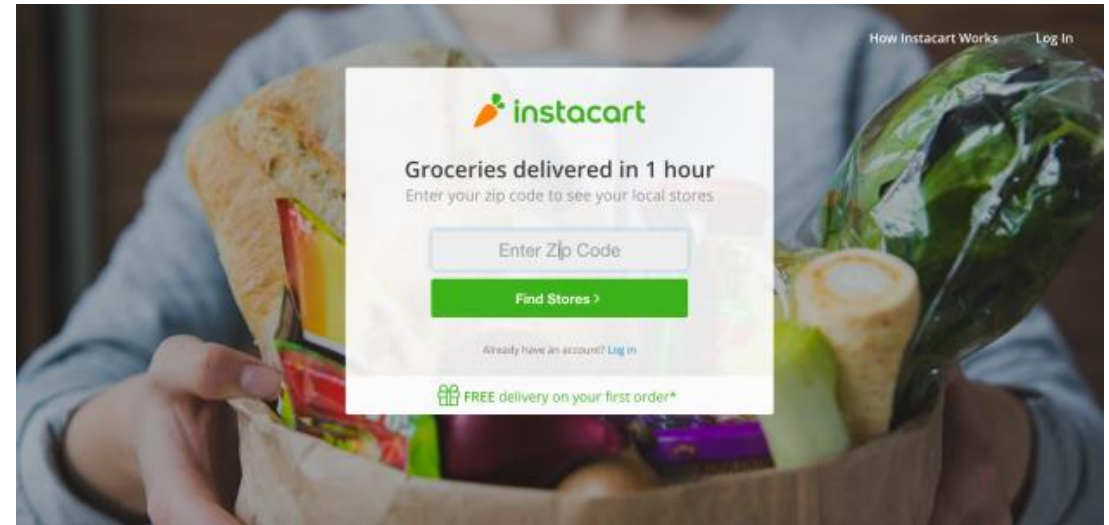
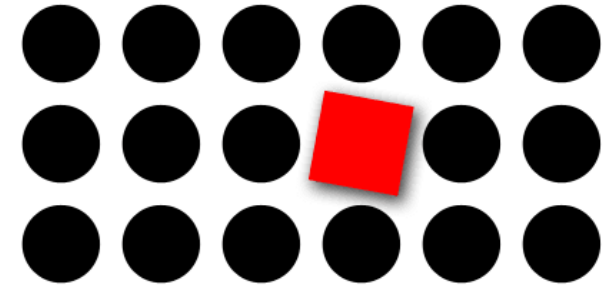
### Step 3

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

# Examples: closure



# Examples: focal point

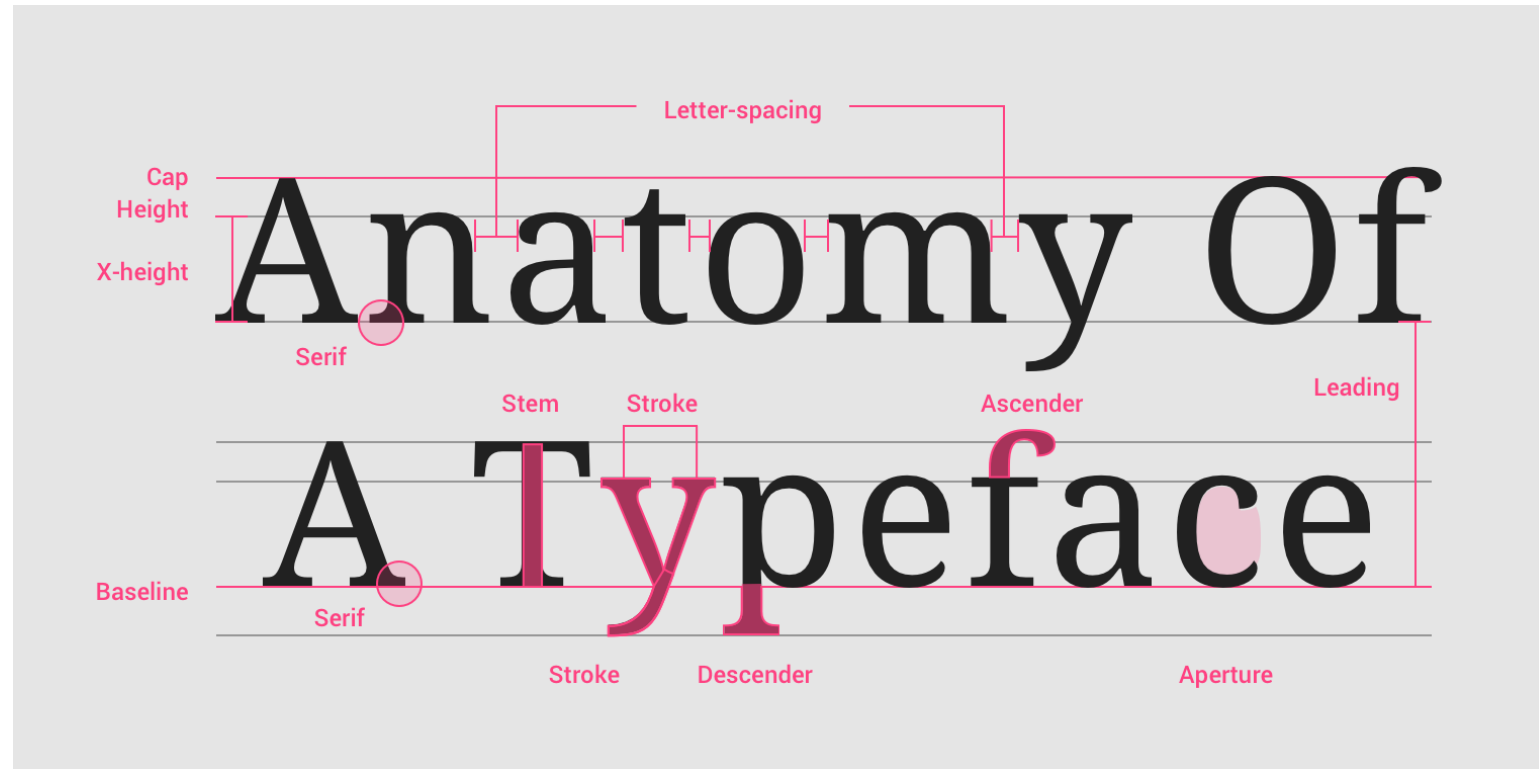


# Typography

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

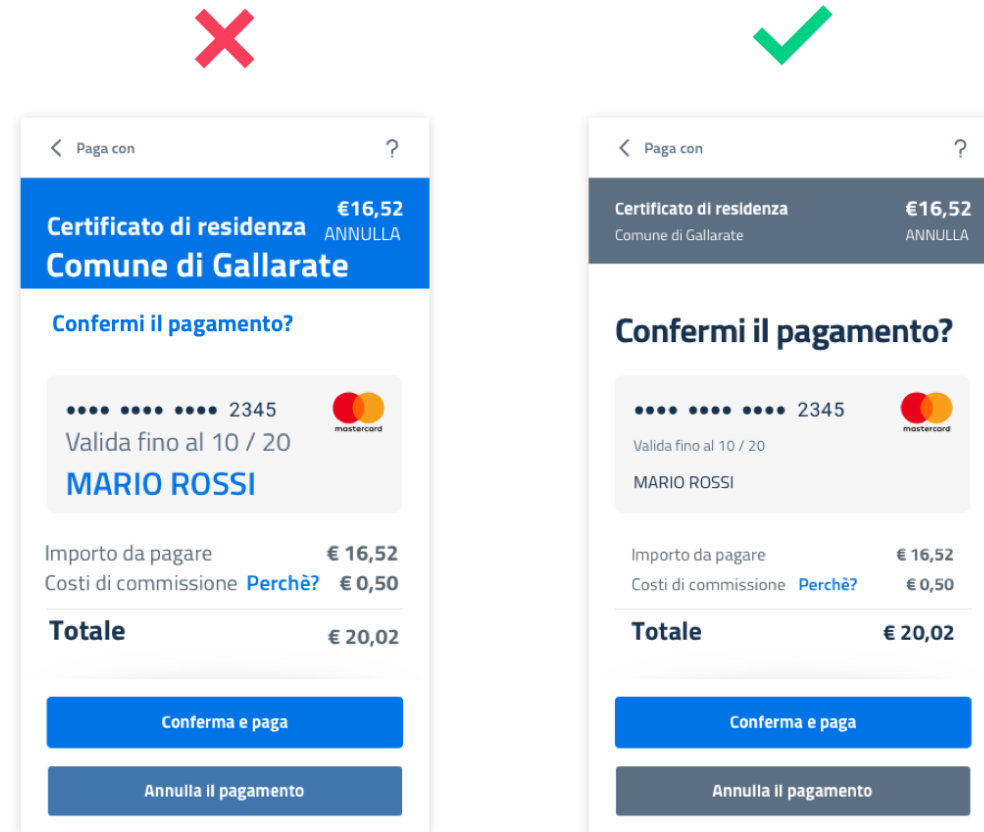
Scale Category	Typeface	Font	Size	Case	Letter spacing
H1	Roboto	Light	96	Sentence	-1.5
H2	Roboto	Light	60	Sentence	-0.5
H3	Roboto	Regular	48	Sentence	0
H4	Roboto	Regular	34	Sentence	0.25
H5	Roboto	Regular	24	Sentence	0
H6	Roboto	Medium	20	Sentence	0.15
Subtitle 1	Roboto	Regular	16	Sentence	0.15
Subtitle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

# Grids and Alignment

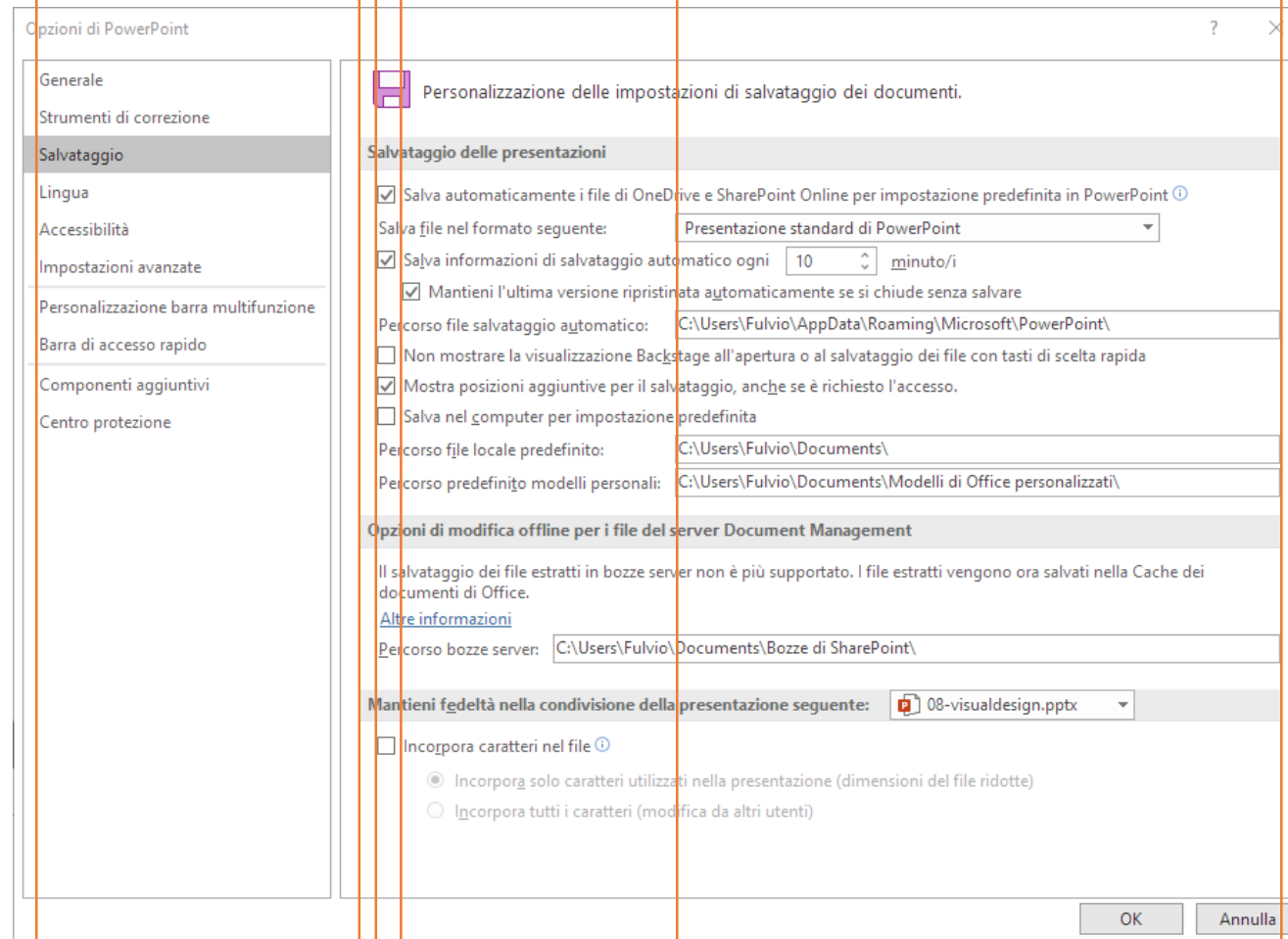
Exploiting grouping and alignment to convey content, at different levels



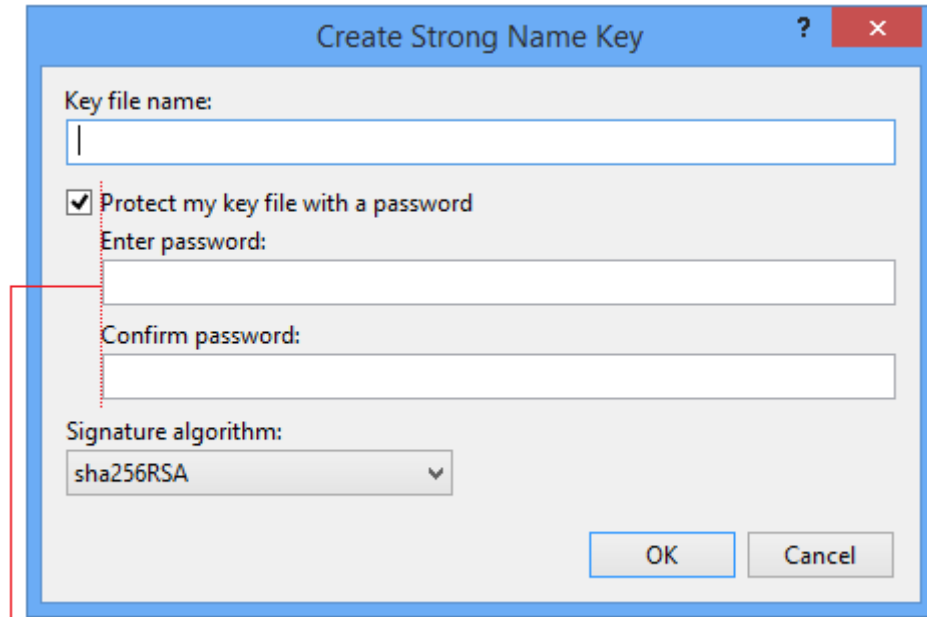
# Alignment

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

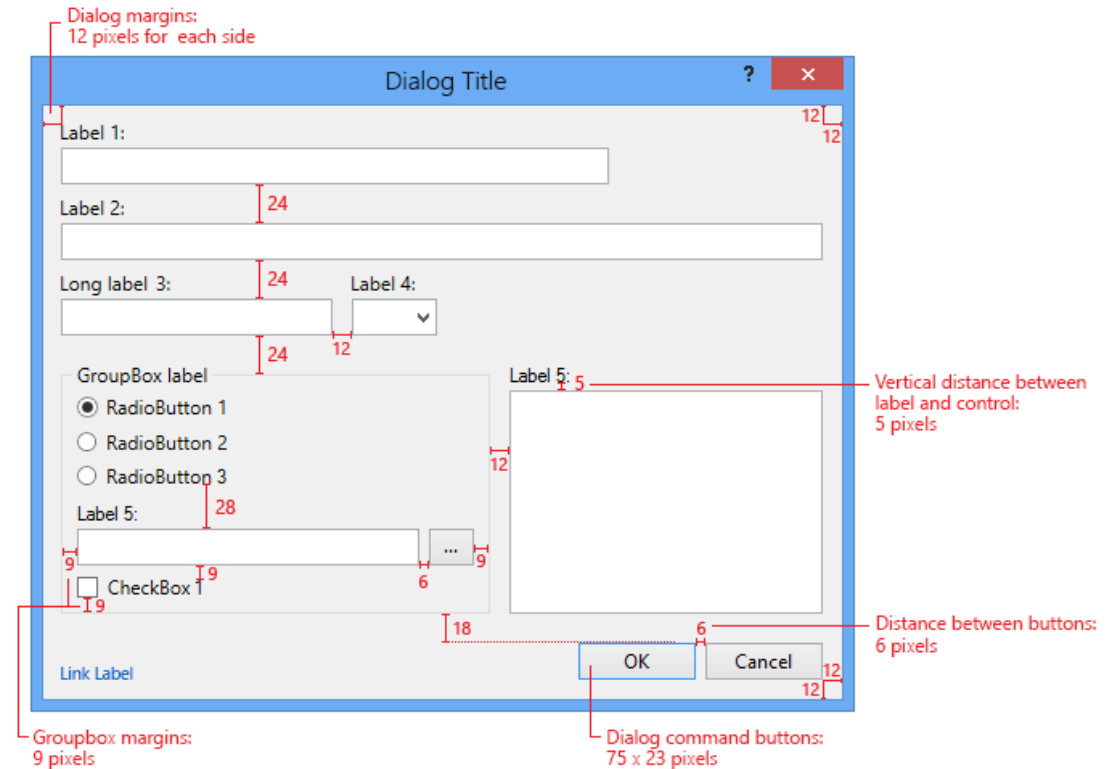
# Example



# Examples

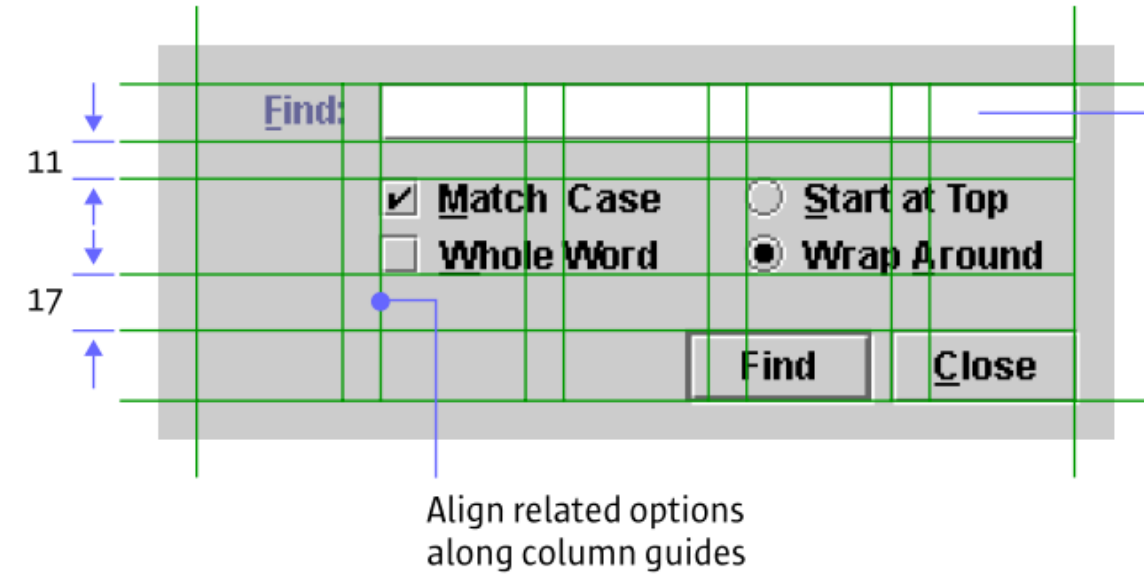


Align labels of nested controls

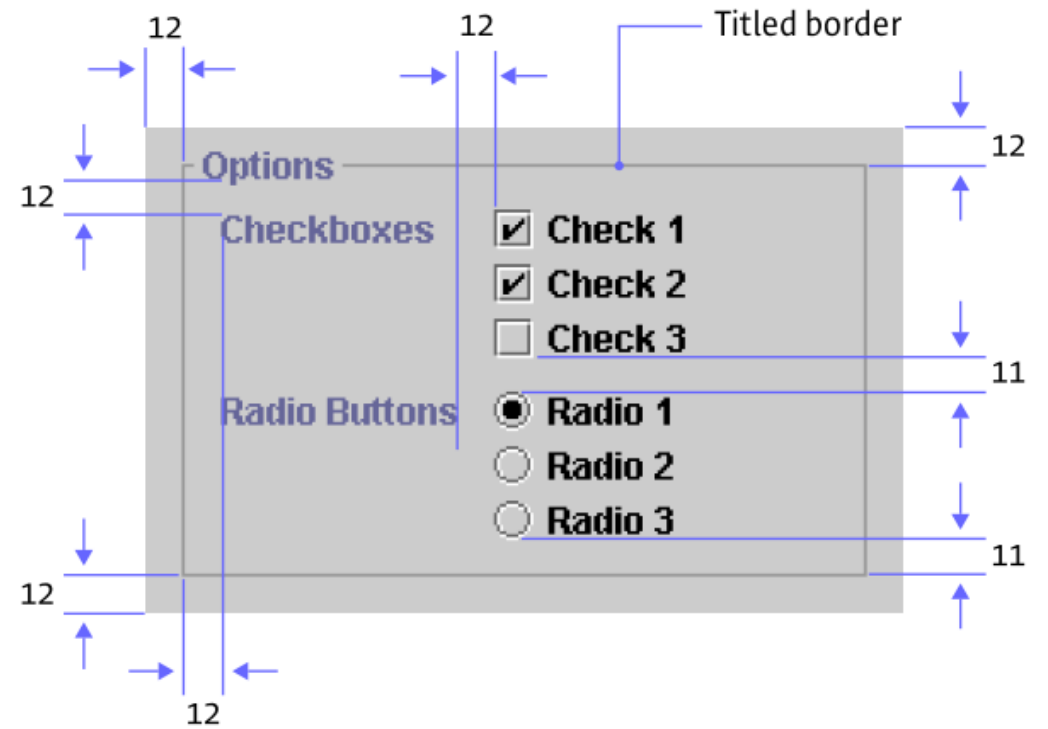


<https://docs.microsoft.com/en-us/visualstudio/extensibility/ux-guidelines/layout-for-visual-studio?view=vs-2019>

# Examples



Place most important option near the top

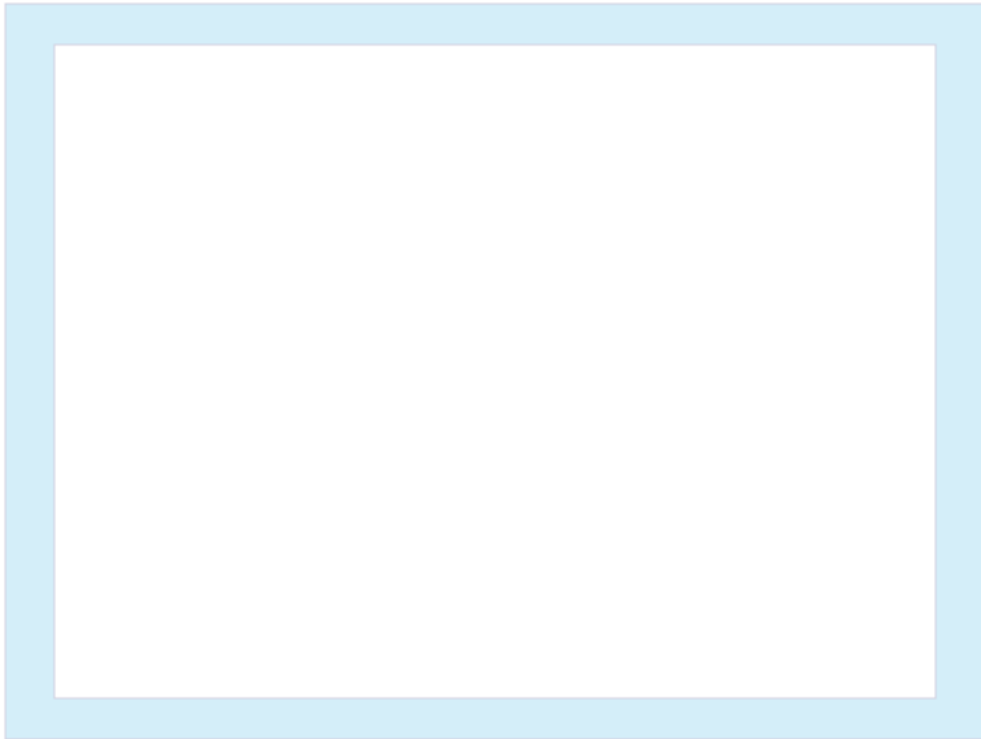


# Grid Layout Ingredients

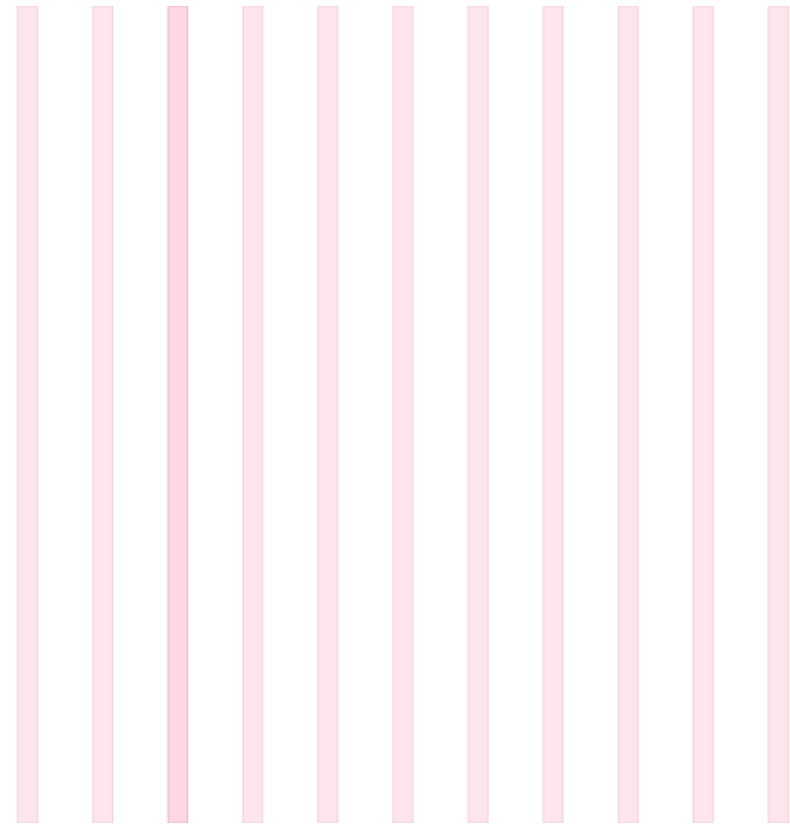
- **Guides:** The edge which you choose to align content with
- **Column:** A vertical division of content
- **Row:** A horizontal division of content
- **Margins:** The area surrounding your content
- **Gutters:** The margins between columns
- **Hang-line:** A horizontal guide to align content to hang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

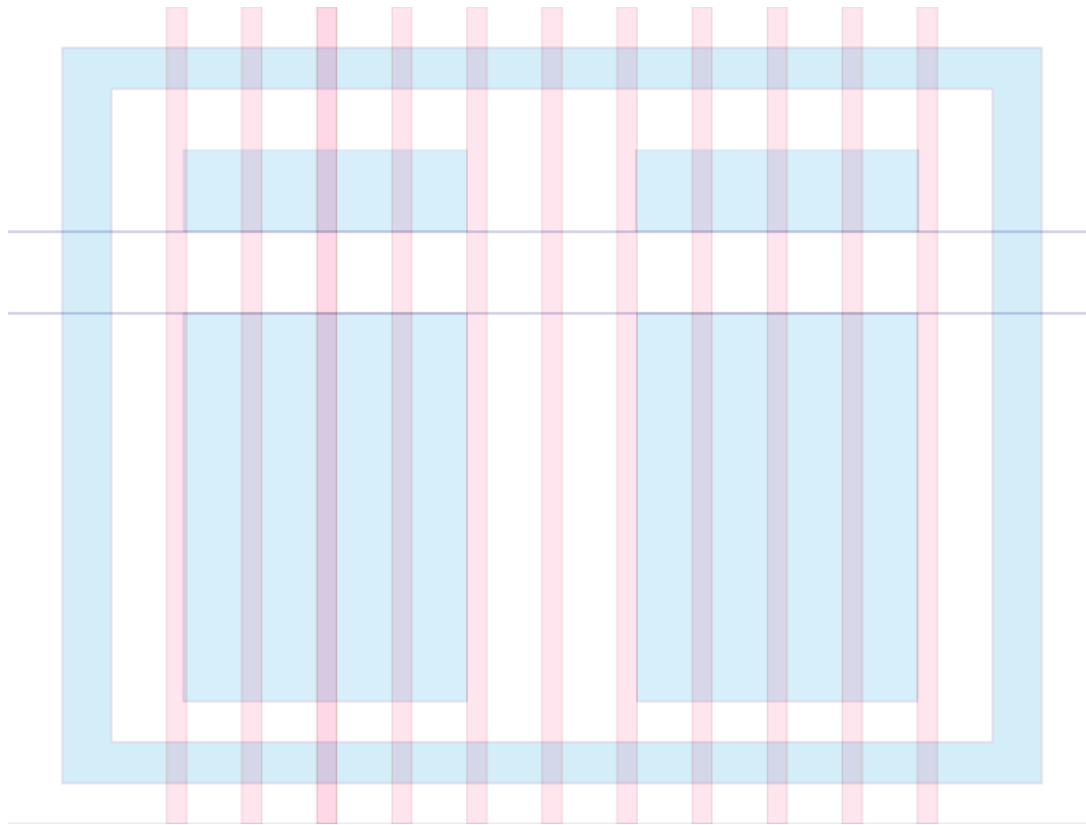


## Columns & Gutters



# Grid Layout Ingredients

## Hanglines and Baselines

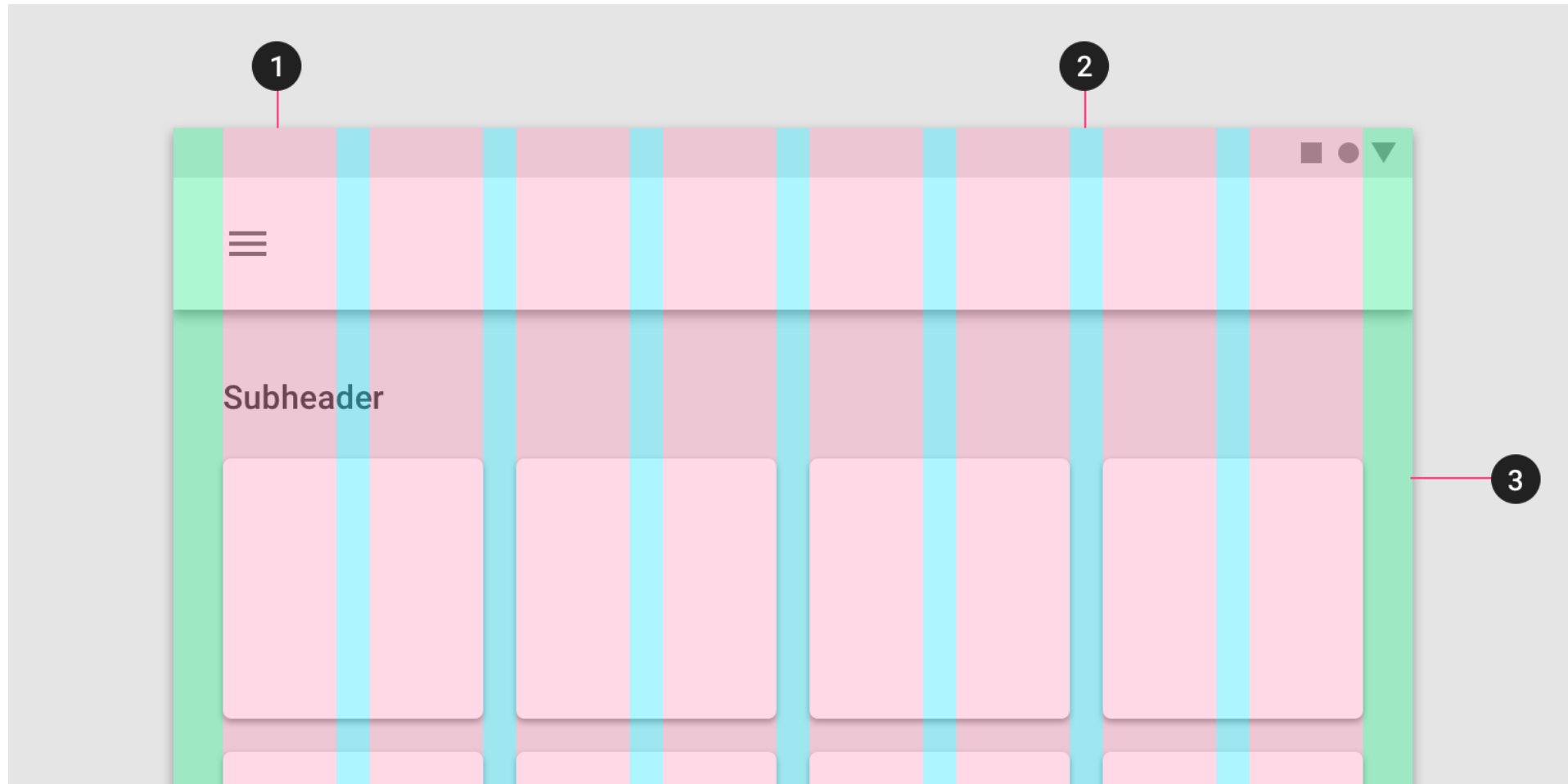


## Baseline Grids



# Example Grid-based layout

1. Columns
2. Gutters
3. Margins





# Example: Bootstrap grid

Always 12 columns in total

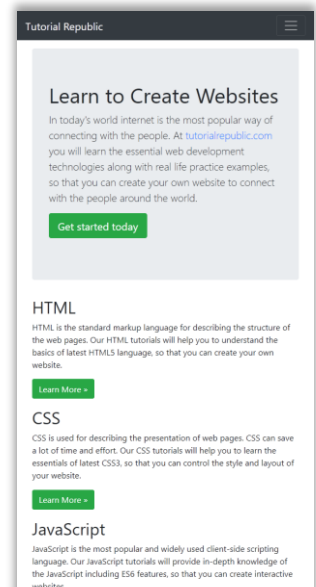
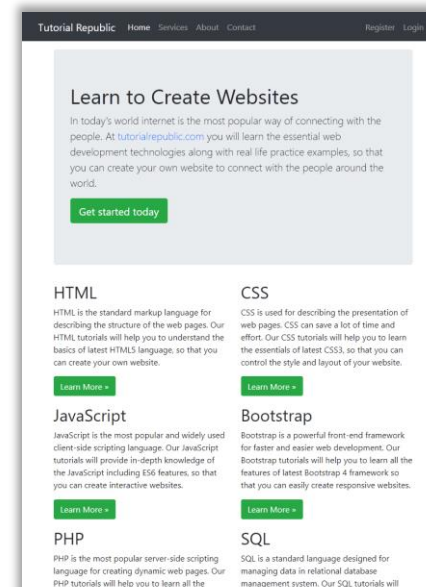
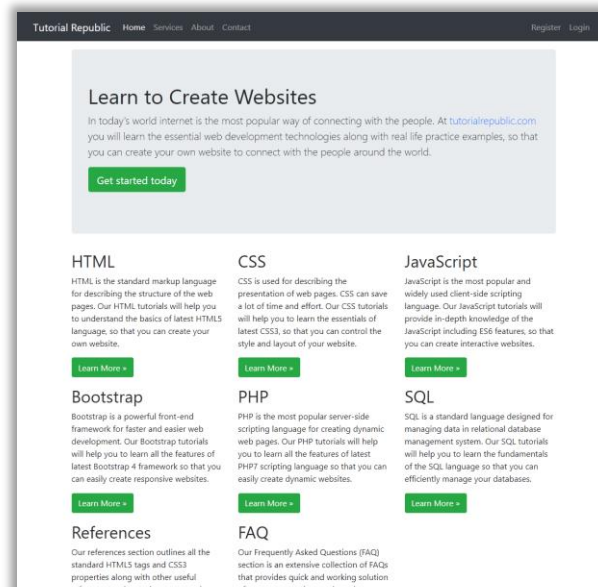
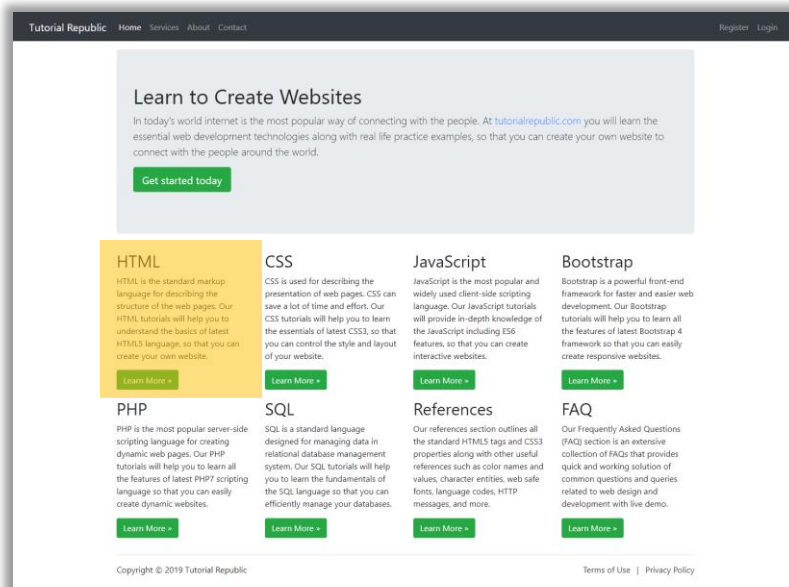
May choose to span a group of columns

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



```
<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>
```

# Other grid systems

960 grid (fixed width, 12 or 16 col)

Unsemantic (responsive, based on %)

The screenshot shows the 960 Grid System website. At the top, it says "If you want a responsive grid framework, check out Unsemantic.com". The main heading is "960 GRID SYSTEM". Below that is a large button that says "Big ol' DOWNLOAD button :)". There are several navigation links: "Home", "About", "Demo", "CSS Documentation", "Sass Documentation", "Download Here", and "GitHub Repo". The page 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". Each section contains text and code snippets. For example, the "Example Usage" section shows CSS code for creating a grid container with columns of 25% and 50% width. The "Successor to 960.gs" section explains that Unsemantic is a fluid grid system that is the successor to the 960 Grid System. The "SE-Oh?" section discusses using push-x and pull-x classes to rearrange the visual layout of a page. The "Built with Sass" section mentions that Unsemantic was built with extensibility in mind. The "Responsive Demo" section shows a demo of the grid system in use. The "Adapt.js Demo" section shows a demo of the grid system in use. The "Browser Support" section lists the major browsers supported: Chrome, Firefox, Internet Explorer (7+), Opera, and Safari.

<https://960.gs/>

The screenshot shows the Unsemantic website. At the top, it says "unsemantic". Below that is a navigation bar with links: "Home", "About", "Demo", "CSS Documentation", "Sass Documentation", "Download Here", and "GitHub Repo". The page 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". Each section contains text and code snippets. For example, the "Example Usage" section shows CSS code for creating a grid container with columns of 25% and 50% width. The "Successor to 960.gs" section explains that Unsemantic is a fluid grid system that is the successor to the 960 Grid System. The "SE-Oh?" section discusses using push-x and pull-x classes to rearrange the visual layout of a page. The "Built with Sass" section mentions that Unsemantic was built with extensibility in mind. The "Responsive Demo" section shows a demo of the grid system in use. The "Adapt.js Demo" section shows a demo of the grid system in use. The "Browser Support" section lists the major browsers supported: Chrome, Firefox, Internet Explorer (7+), Opera, and Safari.

<https://unsemantic.com/>

# Grid structure

Main body:  
Mix of 2x and 3x  
columns

Alternating row  
types



Title area outside the  
grid

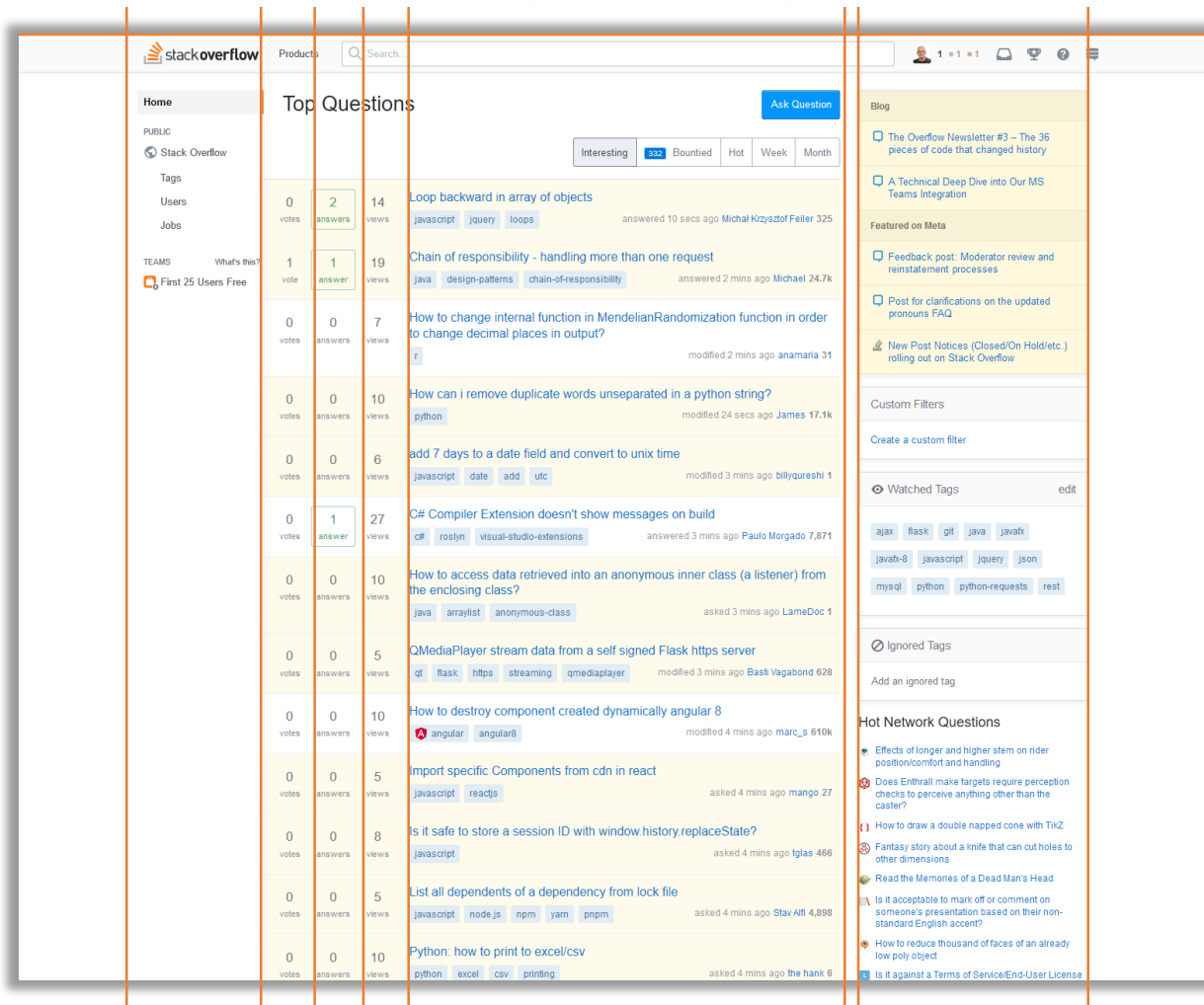
Right column for  
other types of  
articles

# Grid structure

Main content  
(center, wide)

Navigation  
(left, smaller)

Related content  
(right, smaller)



# Example

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

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**

**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 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...

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

# LINGSCARS.COM

Leader of the Pack - The UK's favorite car leasing website!  
Contract hire cars from Ling Valentine. LINGSCARS is the UK's favourite car leasing website - On 2016 I leased over £85 million in cars.

**I AM LING YOU CAN TRUST ME**

**Menu**

- Home
- Cars
- Vans
- Customers
- About Ling
- Fun stuff
- Free stuff
- Live staff

**CARS A-Z**

**ABARTH**

- 124 Spider
- Convertible
- 595 Convertible
- 595 Hatchback
- 695 Convertible

**ALFA ROMEO**

- Giulia Saloon
- Giulietta
- Stelvio Estate

**AUDI**

**Stop**

"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**

**1 DELIVERY TODAY**

- Ford Ka+<sup>10</sup> Arthur ATTLEBOROUGH, NR17

**21 DELIVERIES IN LAST WEEK**

- Renault Captur<sup>10</sup> Cath PONTEFRAC, WF81
- Mercedes GLC Coupe<sup>10</sup> Bill BEDLINGTON, NE22
- BMW 2 Series Convert...<sup>10</sup> Pingu DERBY, DE56
- Nissan Qashqai<sup>10</sup> Arlene GLASGOW, G11
- Volvo XC60 Estate<sup>10</sup> Saif MILTON KEYNES, MK8
- Seat Leon<sup>10</sup> Ben BARNSELY, S70
- Skoda Kodiaq Estate<sup>10</sup> Hannah HAY-ON-WYE, HR3
- Renault Clio<sup>10</sup> Paul MIDDLEBROUGH, T57
- Renault Clio<sup>10</sup> Paul MIDDLEBROUGH, T57
- Seat Arona<sup>10</sup> Steve LONDON, SE18
- Seat Leon<sup>10</sup> Adam HATFIELD, AL10
- Audi A3 Sportback<sup>10</sup> Chris WYMONDHAM, NR18

**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 7). 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!**

- Fiat 500**  
1.2 Pop 8v (69bhp) (4 seats) Hatchback 3dr 1242cc Petrol Manual (5 Speed)  
**RENT NEW £127/mth** including VAT  
3 year cheap car leasing
- Renault Clio**  
0.9 TCE Iconic 12v (90bhp) Hatchback 5dr 898cc Petrol Manual (5 Speed)  
**RENT NEW £152/mth** including VAT  
3 year cheap car leasing
- Citroen C3**  
1.2 PureTech 12v (83bhp) Flair Hatchback 5dr Manual 1199cc  
**RENT NEW £157/mth** including VAT  
2 year cheap car leasing

**Car Leasing Online Service Response Times**

Quote > Proposal > Order > Delivery

**75 CUSTOMERS IN 'PROPOSAL'**

Ling replies in... **0:03:07**

**129 CUSTOMERS IN 'ORDER'**

Ling replies in... **0:05:03**

# 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 screenshot shows the Stack Overflow homepage with the following elements:

- Header:** Stack Overflow logo, search bar, and user profile icons.
- Left Sidebar:** Navigation links for Home, PUBLIC (Stack Overflow), Tags, Users, Jobs, TEAMS (What's this?), and First 25 Users Free.
- Main Content:** A list of top questions with columns for votes, answers, views, tags, and timestamps. Questions include topics like "Loop backward in array of objects", "Chain of responsibility", and "How to change internal function in MendelianRandomization function".
- Right Sidebar:** A "Blog" section with several articles, a "Featured on Meta" section, "Custom Filters", "Watched Tags" (with a list of tags like ajax, flask, git, java, javascript, jquery, json, mysql, python, python-requests, rest), "Ignored Tags", and "Hot Network Questions" with a list of trending topics.

This screenshot is an identical copy of the one on the left, showing the Stack Overflow homepage with the same layout, content, and sidebar elements.

# Example

ITA | ENG | Login | argomenti o persona

SCOPRIRE L'ATENEO | DIDATTICA E STUDENTI | IL MONDO DELLA RICERCA | INNOVAZIONE PER LE IMPRESE | CAMPUS INTERNAZIONALE

## festival della TECNOLOGIA

TORINO, 7-10 NOV 2019

*Tecnologia è Umanità*

È online il programma del Festival della Tecnologia

**EVENTI** Tutti gli eventi

Dal 14.06	Walking Beyond: camminate urbane attraverso la città contemporanea <small>Giugno - Dicembre 2019</small>	Dal 23.10	The Polar oceans and global climate change <small>23 October - 18 November 2019</small>
Dal 04.11	Network dynamics in the social, economic and financial sciences <small>4-8 November 2019</small>	Dal 05.11	OptArch2019 <small>5 - 7 November 2019</small>

**ACCESSO RAPIDO**

Apply@Polito 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

**AVVISI E SCADENZE** Tutti gli avvisi

<small>10 settembre 2019</small> Comitato Leonardo: nuovi bandi per i Premi di Laurea	<small>Scadenza presentazione abstract 15 novembre 2019</small> AI4CH - Artificial Intelligence in geomatics for cultural heritage
<small>Scadenza Call for participation: 15 novembre 2019</small> Progetti resilienti di natura in città in Francia e in Italia	<small>Deadline online registration: 18 November 2019</small> Wireless charging of vehicles (WCV2019)

ITA | ENG | Login | argomenti o persona

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**ACCESSO RAPIDO**

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# Palettes

## BLU

PANTONE

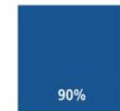


288 CVP

CMYK



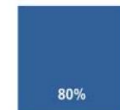
100/80/0/30



90%



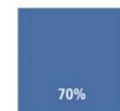
90%



80%



80%



70%



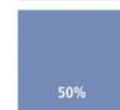
70%



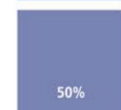
60%



60%



50%



50%

## ARANCIO

PANTONE



ORANGE 021



137 CVP



130 CVP



123 CVP



130 CVP

CMYK



0/70/90/0



0/60/90/0



0/50/90/0



0/40/90/0



0/30/90/0



0/70/100/0



0/60/100/0



0/50/100/0



0/40/100/0



0/30/100/0

## COMBINAZIONI

CMYK



100/80/0/30



0/70/100/0



100/80/0/30



0/60/100/0



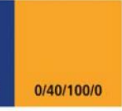
100/80/0/30



0/50/100/0



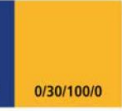
100/80/0/30



0/40/100/0



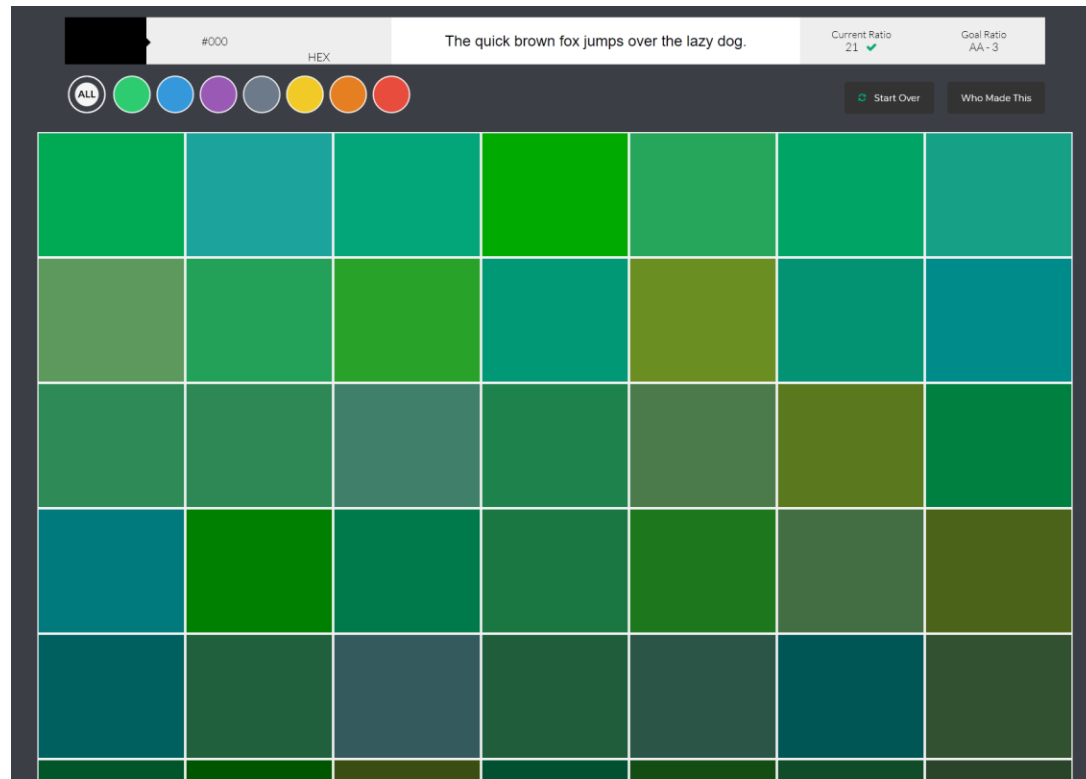
100/80/0/30



0/30/100/0



# 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

# 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

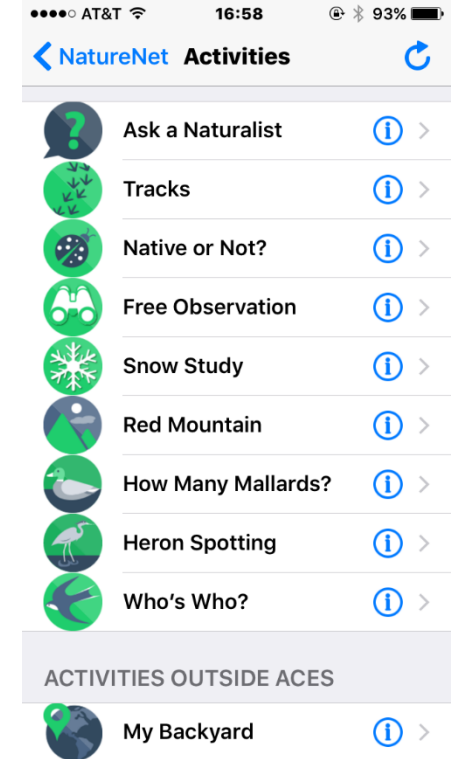
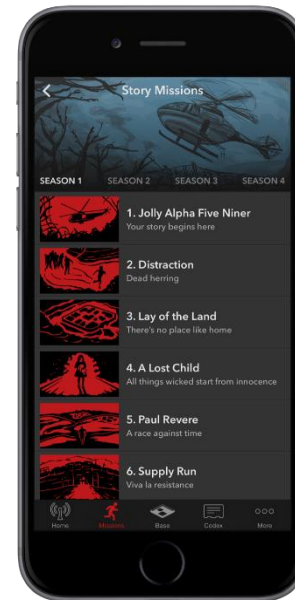
# Navigation by selection

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

For an extra \$5  
you can add a gift wrap  
selected from dozens of choices

Add gift wrap

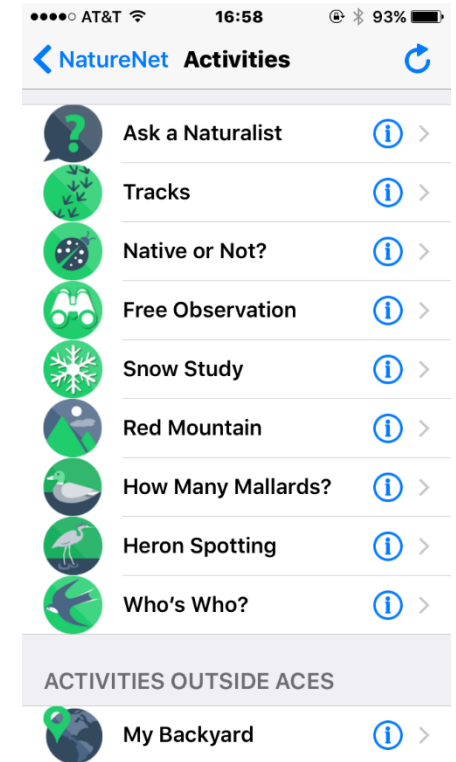
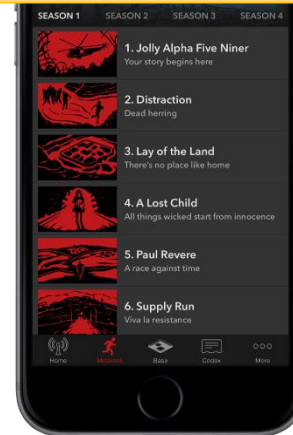
No thanks



# 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

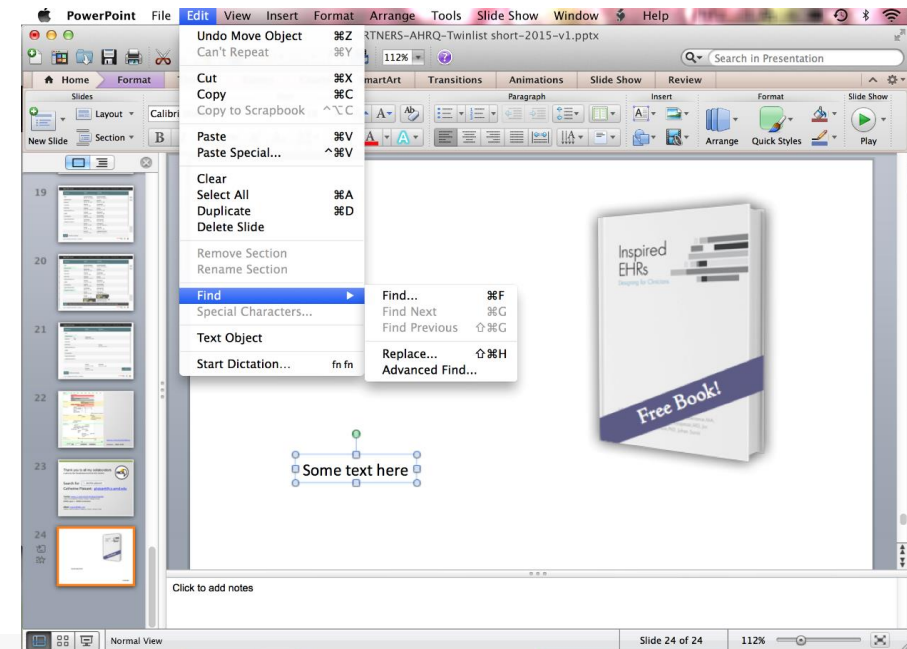
- Radio Buttons and Checkboxes
- Menu bars, pop-up menus, toolbars, palettes and ribbons

Does anyone in your household currently smoke?

- Yes, someone does
- No, no one does
- Not sure

What treatment would you like to discuss with a nurse?

- Surgery
- Physical therapy
- Medication
- Acupuncture (not available in your area)



# Menus

The screenshot shows the NASA website homepage. At the top, there is a navigation menu with links for Missions, Galleries, NASA TV, Follow NASA, Downloads, About, and NASA Audiences. Below this is a secondary menu with links for International Space Station, Journey to Mars, Earth, Technology, Aeronautics, Solar System and Beyond, Education, History, and Benefits to You. The main content area is a grid of news stories. The top-left story is titled "One-Year Crew Halfway There" and features a photo of three astronauts in a space station. To its right is a story titled "The Martian' Director Ridley Scott Discusses NASA's Journey to Mars" with a play button icon. Below these are stories about a "Rare Sept. 27 Supermoon Eclipse", "The Real Martians" (discussing the movie and NASA's current technology), and a tweet about "3D Printed Habitat". The bottom row includes stories on "Space Travel" (New Green Propellants), "Fire and Smoke" (Rough Fire Still Burning in California), "Real Martians Moment: We're Learning More!", and "SDO Solar Mission" (SDO Catches an Earth-Moon Double Photobomb). At the bottom, there is a "MORE STORIES" link and the NASA logo with the text "National Aeronautics and Space Administration" and "NASA Official: Brian Dunbar".

The screenshot shows the NASA TV website. At the top, there is a search bar and a menu icon. Below this is a video player showing a scene from the International Space Station with three astronauts. The video title is "One-Year Crew Halfway There". Below the video player, there is a smaller version of the same video player. The NASA logo is visible in the top left corner.

# 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

The screenshot displays the REI website's navigation and product listing structure. At the top, there is a utility bar with links for Help, Wish List, Gift Registry, Classes & Events, Store Locator, and Checkout. Below this is the REI logo, a search bar, and a promotional message: "Welcome to REI! | Log In or Register" and "FREE SHIPPING With \$50 minimum purchase."

The main navigation menu includes categories like SHOP REI, SHOP REI OUTLET, TRAVEL WITH REI, LEARN, BLOG, MEMBERSHIP, and STEWARDSHIP. A secondary menu lists sub-categories such as Camp & Hike, Climb, Cycle, Fitness, Run, Paddle, Snow, Travel, Men, Women, Kids, Footwear, and More. A "Deals" button is also present.

The "Cycle" sub-category is expanded, showing a tree-like structure of products:

- 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

A promotional banner for "GIVE THE GIFT OF GEAR ANYTIME, ANYWHERE" with a "Buy now" button is also visible.

Below the navigation, there are filters for "Deals (31)", "Features" (Moisture wicking, Quick drying, Sun-protective fabric, Waterproof, Insulated, Earflaps, Made in USA), and "Brand" (686). The product grid shows items like "REI Rainwall Rain Jacket - Girls'", "REI Rainwall Rain Pants - Kids'", and "REI Sahara Convertible Pants - Girls'".

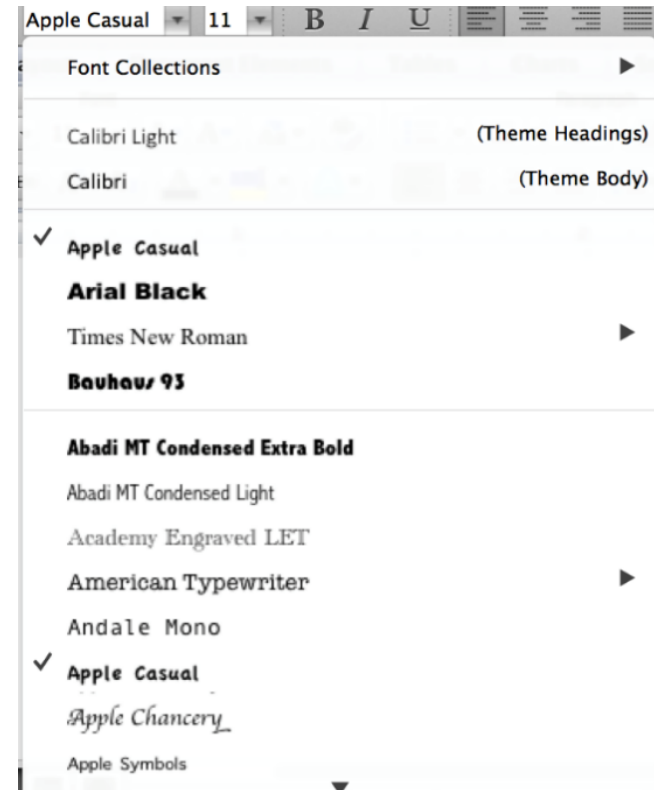
# Rules for tree-like organization

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



# 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 'Teaching portal' of the Politecnico di Torino. The header includes navigation links for 'The Politecnico', 'Teaching', 'Research', 'Business', and 'International Campus', along with language options 'ITA | ENG', a 'Login' button, and a search bar. The main content area is a grid of service tiles:

- 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**: A large empty box with a link for further information.
- 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.

The footer contains contact information, logos for 'Ente Regionale per il Diritto alle Scienze Universitarie', 'Lezioni online demo', 'Osservatorio regionale', and 'PoliTO App', along with social media icons and the copyright notice: '© Politecnico di Torino Corso Duca degli Abruzzi, 24 - 10129 Torino, ITALY'.

# Example

Bachelor's degree programmes	Young Talent Project
Master's degree programmes	Alta Scuola Politecnica
Specializing Master's programmes and Lifelong Learning	Ph.D. programmes
	Postgraduate School
Curricula and course syllabi of current and previous years	Summer School

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	

Teaching portal

Generale	Area dell'Architettura Corsi di Laurea di 1° livello	Area dell'Architettura Corsi di Laurea Magistrale
Studenti	Area dell'Ingegneria Corsi di Laurea di 1° livello	Area dell'Ingegneria Corsi di Laurea Magistrale

Fees and Reductions University fees, exemptions and reductions.	Part-time Collaborations part-time collaborations for remunerative activities supporting education and services.	Halls of residence Accommodation solutions, services, benefits.
Researching activity announcements Scholarships willing to work in the university and in the field of researching.	Scholarships and prizes Scholarships and prizes to help deserving students financially.	External Institutions' announcements Scholarships and prizes supported by external institutions addressed to students and graduates.
News - events - notices		

Almaurea Consorzio interuniversitario per l'Università e il mondo del lavoro.	Esami di stato Presso il Politecnico di Torino è possibile conseguire l'abilitazione all'esercizio delle professioni di Architetto e Ingegnere.	Ex allievi Associazione fondata nel 1908. Accumunati dalla formazione politecnica, dall'interesse per la cultura scientifica e l'innovazione tecnologica.	Certificati e autocertificazioni Le procedure per ottenere i certificati e presentare le autocertificazioni sono disponibili nell'omonima sezione della guida dello studente.
--	--	--	--

# Example

**Survey@Polito**

Administration -- Logged in as: **cornio**

Surveys: Smart Home Survey

Survey Smart Home Survey (ID:365355)

Question groups: Please choose...

**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 Como ([fulvio.corno@polito.it](mailto: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](mailto: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

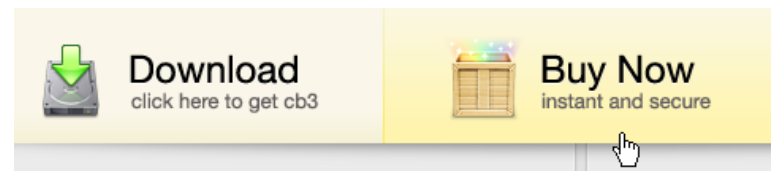
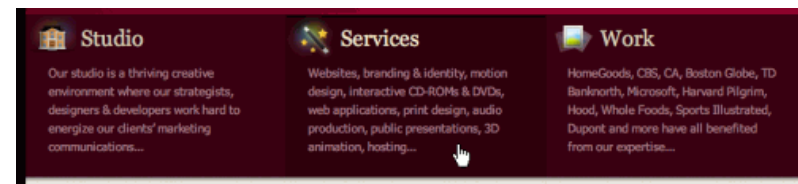
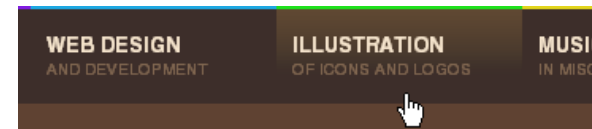
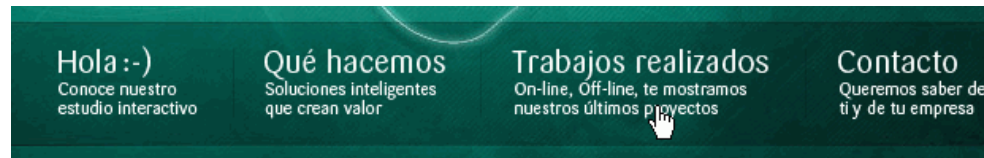
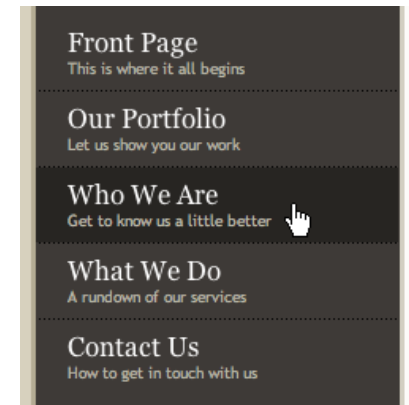
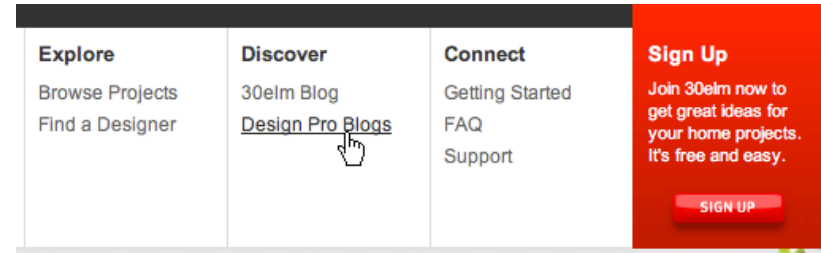
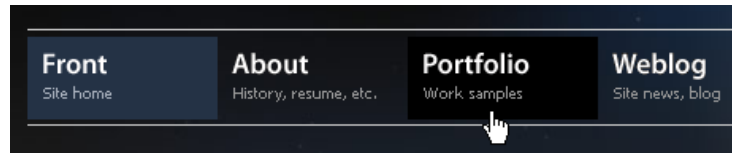




# Links

- 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



# Forms

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

The screenshot displays a web form titled "Create an IEEE Account" with a close button in the top right corner. The form is organized into two main columns for logical field grouping.

**Left Column: Provide your personal information**

- \* Required field** (indicated by a red asterisk)
- \* Given/First name:** Input field containing "Catherine".
- Middle name:** Empty input field.
- \* Last/Family/Surname:** Input field containing "Plaisant".

**Right Column: Enter e-mail address & password**

- Text: "The e-mail provided here will be the username of your account."
- \* E-mail address:** Input field containing "cplaisant@" with a red border and a red warning icon.
- \* Re-enter e-mail address:** Empty input field.
- \* Password:** Input field with masked characters ".....".
- \* Confirm password:** Empty input field.

**Validation Feedback:**

- A yellow warning box on the right states: "The e-mail address provided is not in a valid e-mail format (for example: j.doe@nomail.com). Please try again."
- A green success box on the right states: "Your password is good". Below it, text reads: "Passwords must be between 8 and 64 characters, and include at least one number. [More...](#)"

**Set security questions**

- Text: "For your security, IEEE Accounts are required to have two security questions and answers."
- \* Security question 1:** Dropdown menu with "Select" selected.
- \* Type your answer:** Empty input field.
- \* Security question 2:** Dropdown menu with "Select" selected.
- \* Type your answer:** Empty input field.

**Footer:**

- [Privacy & Opting Out of Cookies](#)
- Create Account and Continue Joining** (orange button)
- [Cancel](#)

# 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/>

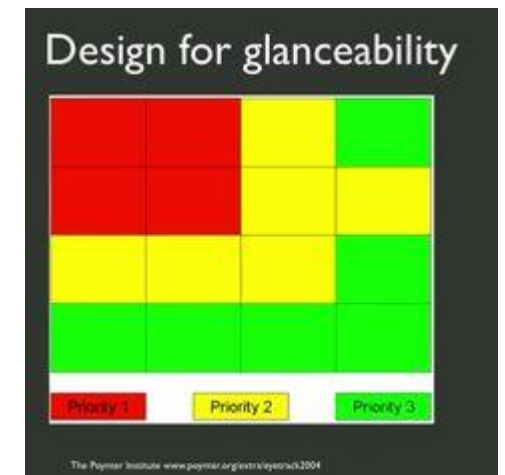
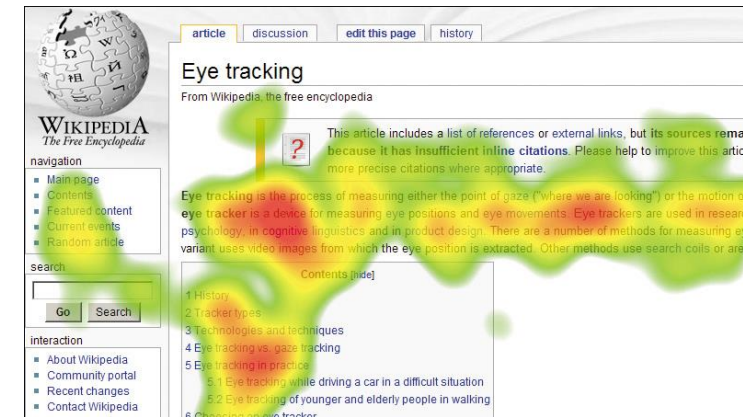
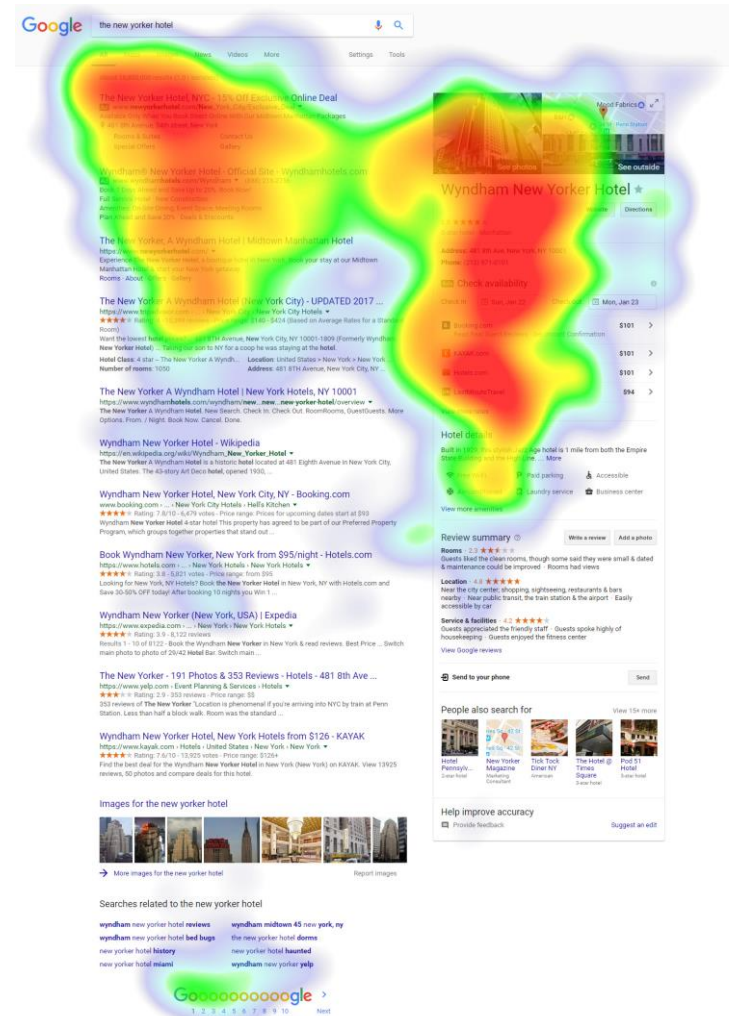
# Location on the page

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





# Scanning

## WHAT DESIGNERS BUILD...



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- Tracking of your points and miles



How do I check my frequent flyer miles?

# Experiment

Site Version	Sample Paragraph	Usability Improvement (relative to control condition)
<b>Promotional writing (control condition)</b> using the "marketese" found on many commercial websites	Nebraska is filled with internationally recognized attractions that draw large crowds of people every year, without fail. In 1996, some of the most popular places were Fort Robinson State Park (355,000 visitors), Scotts Bluff National Monument (132,166), Arbor Lodge State Historical Park & Museum (100,000), Carhenge (86,598), Stuhr Museum of the Prairie Pioneer (60,002), and Buffalo Bill Ranch State Historical Park (28,446).	0% (by definition)
<b>Concise text</b> with about half the word count as the control condition	In 1996, six of the best-attended attractions in Nebraska were Fort Robinson State Park, Scotts Bluff National Monument, Arbor Lodge State Historical Park & Museum, Carhenge, Stuhr Museum of the Prairie Pioneer, and Buffalo Bill Ranch State Historical Park.	<b>+58%</b>
<b>Scannable layout</b> 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"> <li>•Fort Robinson State Park (355,000 visitors)</li> <li>•Scotts Bluff National Monument (132,166)</li> <li>•Arbor Lodge State Historical Park &amp; Museum (100,000)</li> <li>•Carhenge (86,598)</li> <li>•Stuhr Museum of the Prairie Pioneer (60,002)</li> <li>•Buffalo Bill Ranch State Historical Park (28,446).</li> </ul>	<b>+47%</b>
<b>Objective language</b> using neutral rather than subjective, boastful, or exaggerated language (otherwise the same as the control condition)	Nebraska has several attractions. In 1996, some of the most-visited places were Fort Robinson State Park (355,000 visitors), Scotts Bluff National Monument (132,166), Arbor Lodge State Historical Park & Museum (100,000), Carhenge (86,598), Stuhr Museum of the Prairie Pioneer (60,002), and Buffalo Bill Ranch State Historical Park (28,446).	<b>+27%</b>
<b>Combined version</b> 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"> <li>•Fort Robinson State Park</li> <li>•Scotts Bluff National Monument</li> <li>•Arbor Lodge State Historical Park &amp; Museum</li> <li>•Carhenge</li> <li>•Stuhr Museum of the Prairie Pioneer</li> <li>•Buffalo Bill Ranch State Historical Park</li> </ul>	<b>+124%</b>

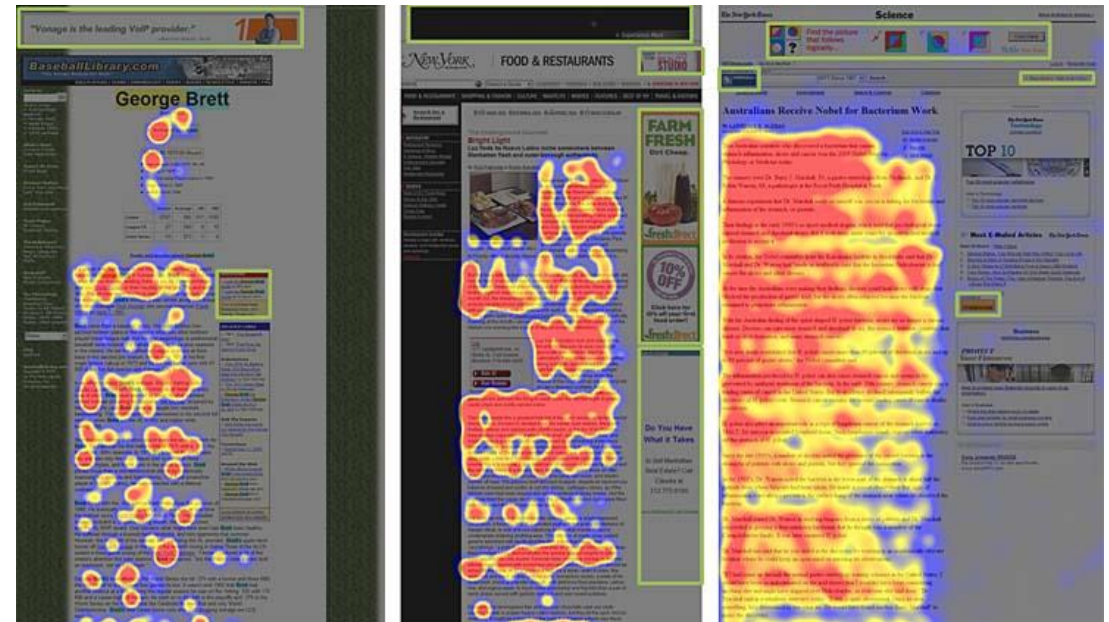


# Best locations to put content

- Above the fold
- 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/>

The screenshot shows the homepage of the website designers.italia.it. At the top, there is a blue navigation bar with links for 'AgID + Team Digitale', 'Piano Triennale', 'Developers', 'Designers', 'Forum', 'Docs', and 'GitHub'. Below this is a teal banner with the text 'The Design System of the Italian Public Administration' and a link to 'read on Speaker Deck'. The main header features the 'designers Italia' logo with the tagline 'dalla parte dei cittadini' and social media icons for B&B, Facebook, Twitter, and LinkedIn. A secondary navigation bar includes 'Home', 'Chi siamo', 'Le guide', 'I kit', 'I progetti', 'Le storie', 'La roadmap', and 'I contatti', along with 'Come lo uso' and 'Come partecipo'. The main content area is framed by a large blue L-shaped graphic. It contains the headline: 'Disegniamo **servizi digitali semplici** per **risolvere i problemi dei cittadini** e restituire il **buonumore** ;-)' and a paper airplane illustration. Below the headline, there are two call-to-action boxes: 'Iscriviti alla newsletter' with an email input field and an 'ISCRIVITI' button, and 'Approfondisci su Medium' with a 'LEGGI IL POST' button. A short paragraph describes the site as a reference point for public administration design, followed by a link 'per saperne di più >'. The footer of the website is a solid grey bar.

# 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 Elmqvist, 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=PLLsT5z\\_DsK\\_nusHL\\_Mjt87THSTlgrsyJ](https://www.youtube.com/playlist?list=PLLsT5z_DsK_nusHL_Mjt87THSTlgrsyJ)

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