

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

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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

Recognizable page structure

The screenshot displays the homepage of the Italian newspaper **LA STAMPA**. The top navigation bar includes links for **GNN**, **NEWSLETTER**, social media icons for **TWITTER** and **FACEBOOK**, and options for **ABBONATI** and **ACCEDI**. Below the header, there's a main title **LA STAMPA** and a secondary navigation bar with links for **MENU**, **LEGGI IL QUOTIDIANO**, **TOP NEWS**, **TUTTOLIBRI**, and a search icon.

The main content area features several news items:

- 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 GRIGLIE
- Reportage Trombe d'aria, pioggia e fiumi esondati: in Liguria torna l'incubo alluvione** by MARCO MENDUNI

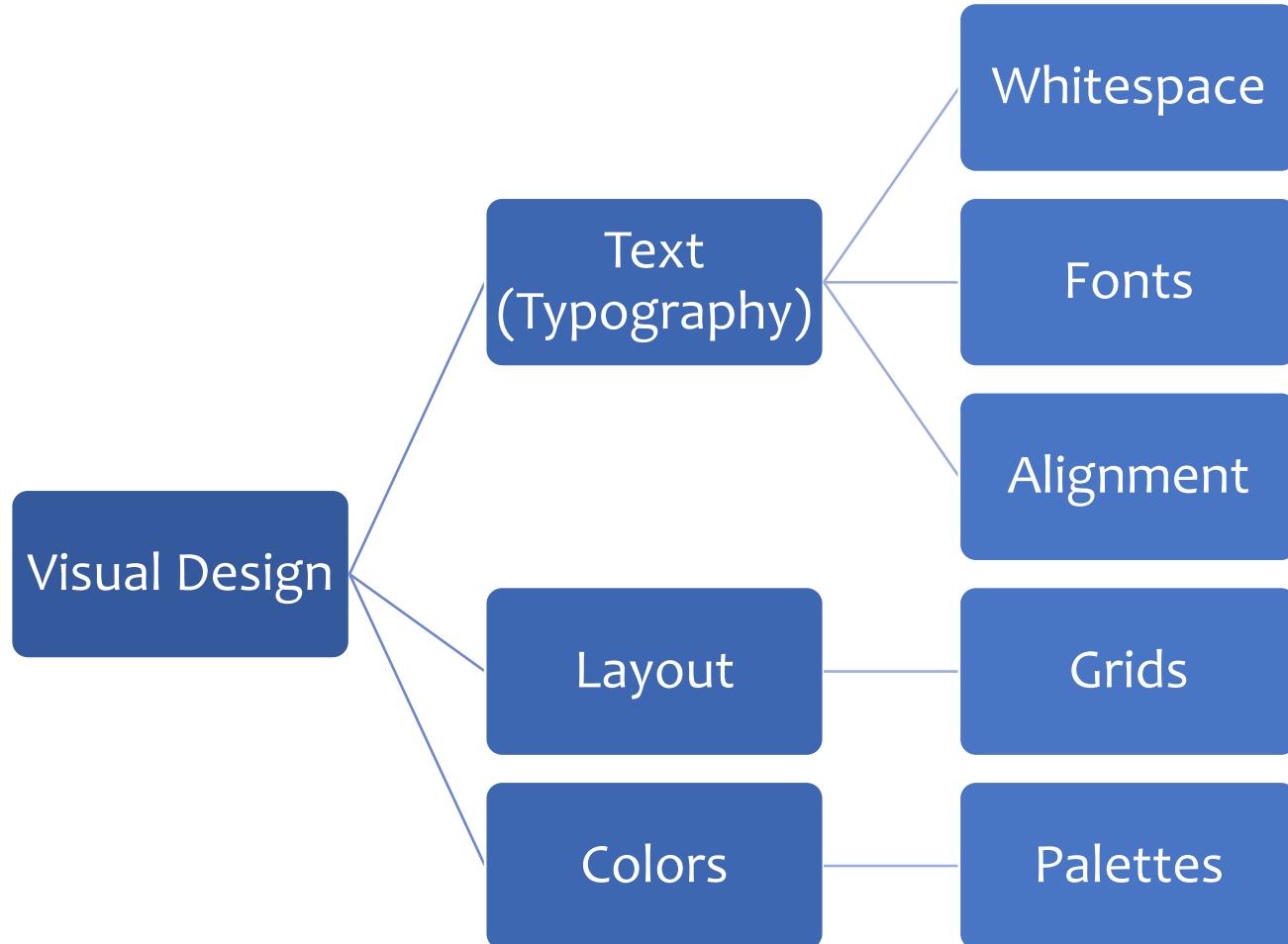
Below these are larger news cards:

- ArcelorMittal abbandona Taranto e l'ex Ilva. Scoppia la polemica. L'azienda: c'era il diritto di recesso** by PAOLO BARONI. Includes a photo of an ArcelorMittal sign on a building.
- Intervista - Calenda: sull'Ilva di Taranto distrutto il lavoro di anni** by PAOLO BARONI. Includes a photo of a man speaking.
- ArcelorMittal si tira indietro sull'Ex Ilva, ecco quanto pesa la decisione su Taranto** by GIULIA CIANCAGLINI. Includes a photo of an industrial facility.
- La storia dell'acciaieria più grande d'Europa. Ecco l'Ilva dal 2012 a oggi** by MARCO ZATTERIN. Includes a photo of an industrial complex.
- Il surriscaldamento climatico è arrivato nel profondo delle Alpi** by NICOLA PINNA. Includes a photo of a person working in a snowy, rocky environment.
- LA STORIA DI GIOVANNI BELZONI IN UN LIBRO** by PAOLO BARONI. Includes a photo of a man with a beard.
- Da Abu Simbel a Giza, l'italiano che inventò l'egittologia** by MARCO ZATTERIN. Includes a photo of a man speaking.
- SECONDO NOI** by MARCO SODANO. Includes a photo of a group of people.
- Sud svuotato e senza lavoro: lo Svimez lancia l'allarme recessione** by MARCO SODANO. Includes a photo of a car interior.

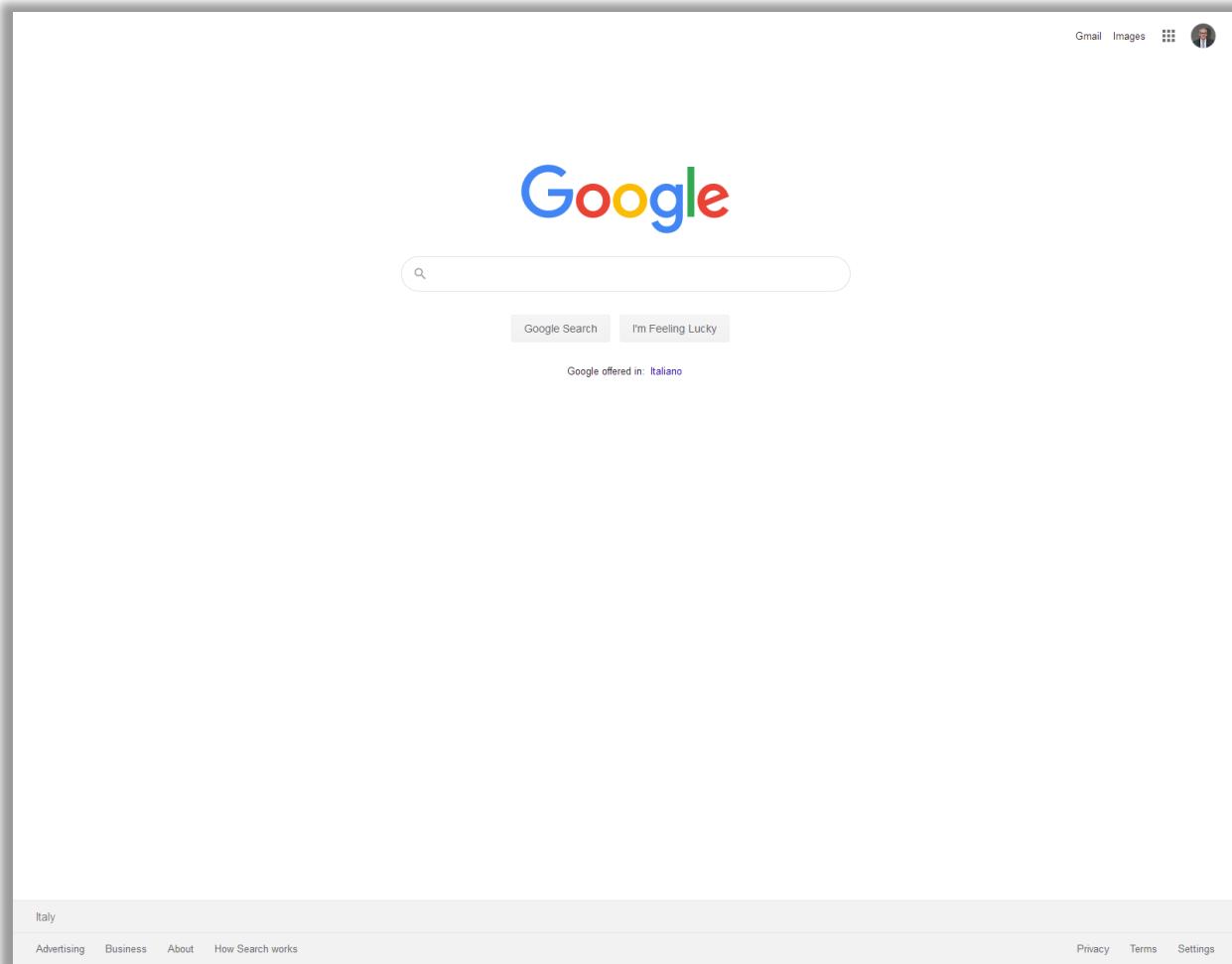
Recognizable page structure



Key ingredients



Recognizable page structure



Recognizable page structure

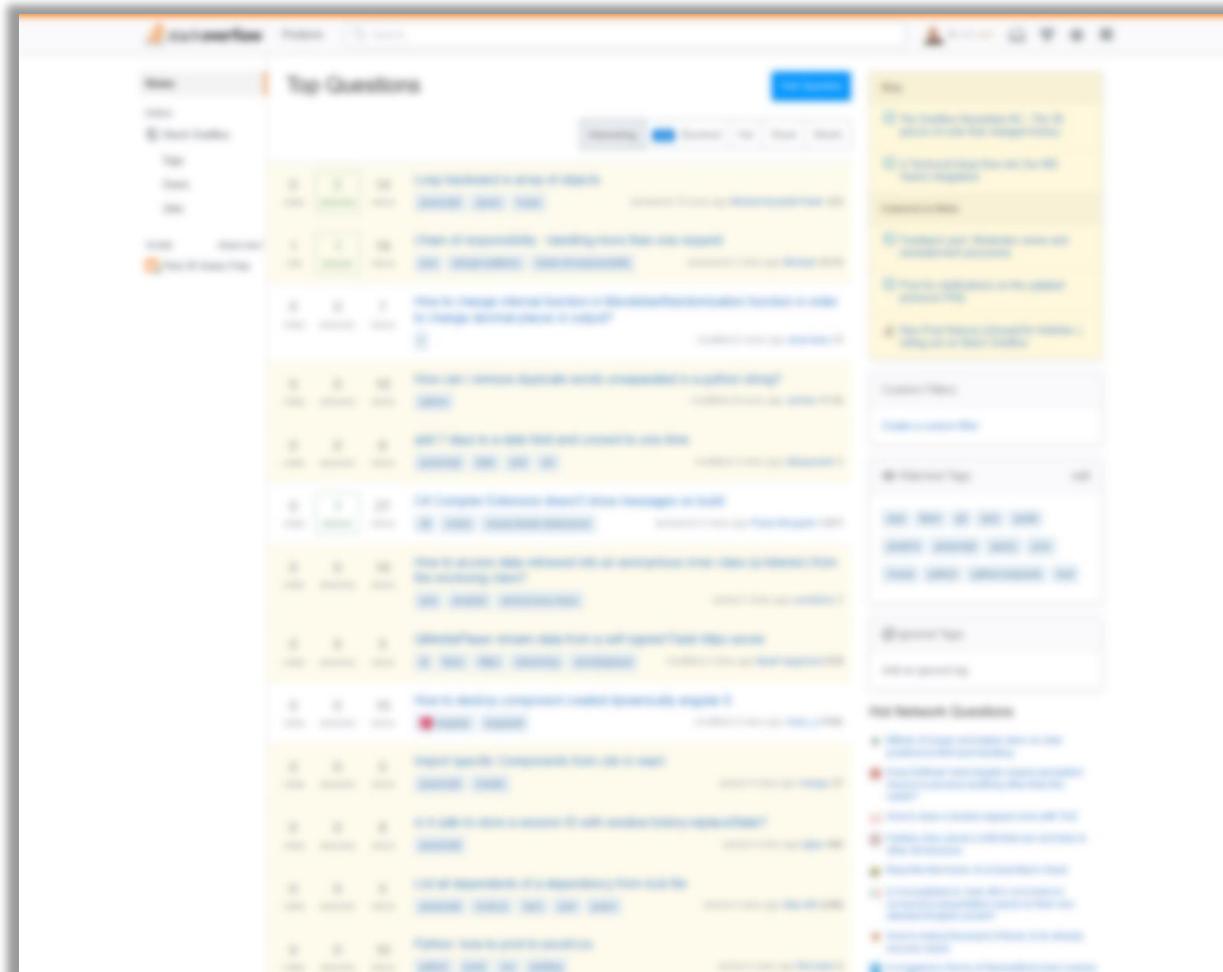


Recognizable page structure

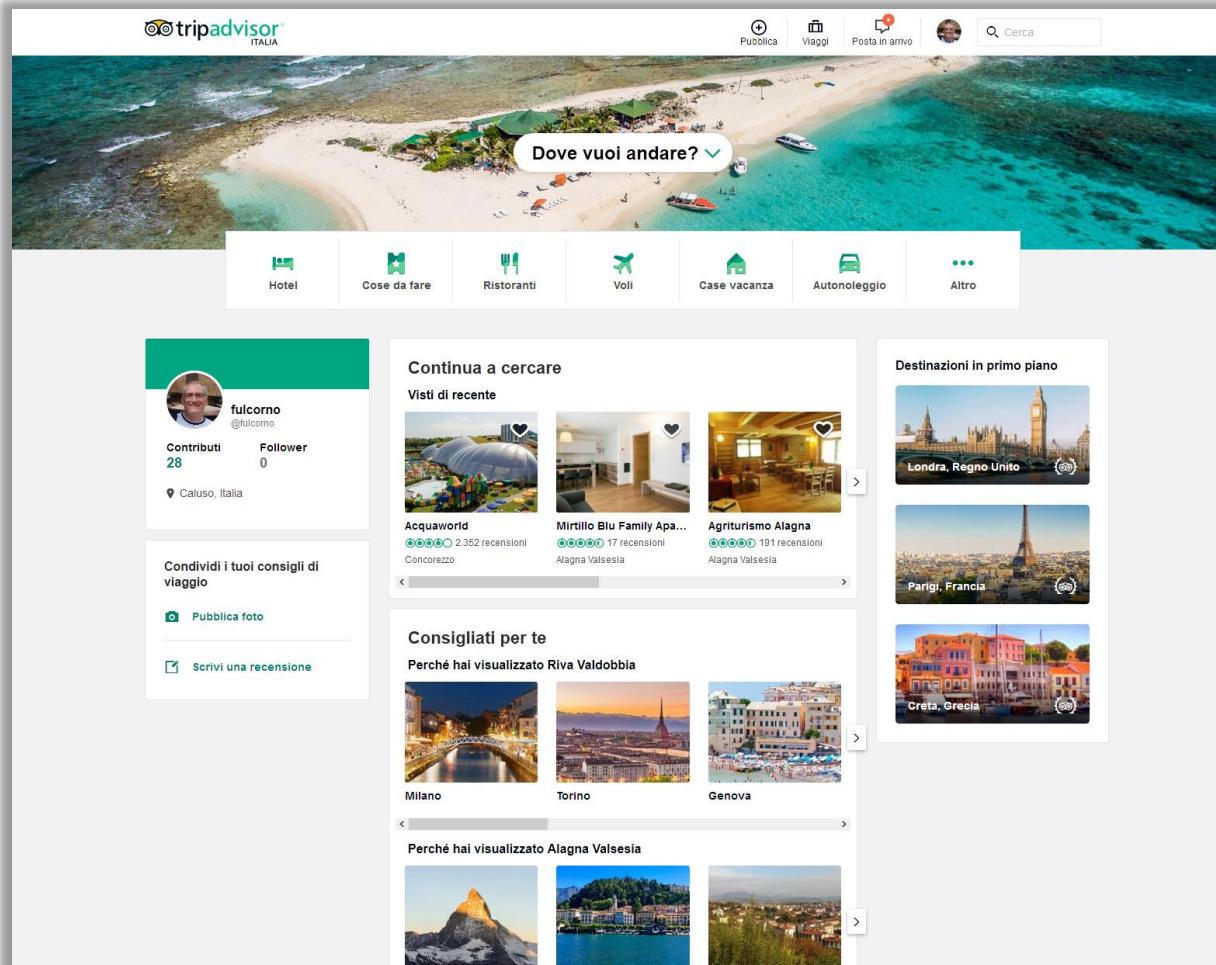
The screenshot shows the Stack Overflow 'Top Questions' page. The main content area displays a list of ten questions, each with a title, vote count, answer count, view count, tags, and a brief description. To the right of the main content are several sidebar panels:

- Blog**: Lists recent blog posts: "The Overflow Newsletter #3 – The 36 pieces of code that changed history", "A Technical Deep Dive into Our MS Teams Integration", and "Feedback post: Moderator review and reinstatement processes". It also mentions "Post for clarifications on the updated pronouns FAQ" and "New Post Notices (Closed/On Hold/etc.) rolling out on Stack Overflow".
- Custom Filters**: A section for creating custom filters.
- Watched Tags**: A list of tags: ajax, flask, git, java, javafx, javascript, jquery, json, mysql, python, python-requests, rest.
- Ignored Tags**: A section for adding ignored tags.
- Hot Network Questions**: A list of ten questions from other Stack Exchange sites, each with a small icon and a brief description.

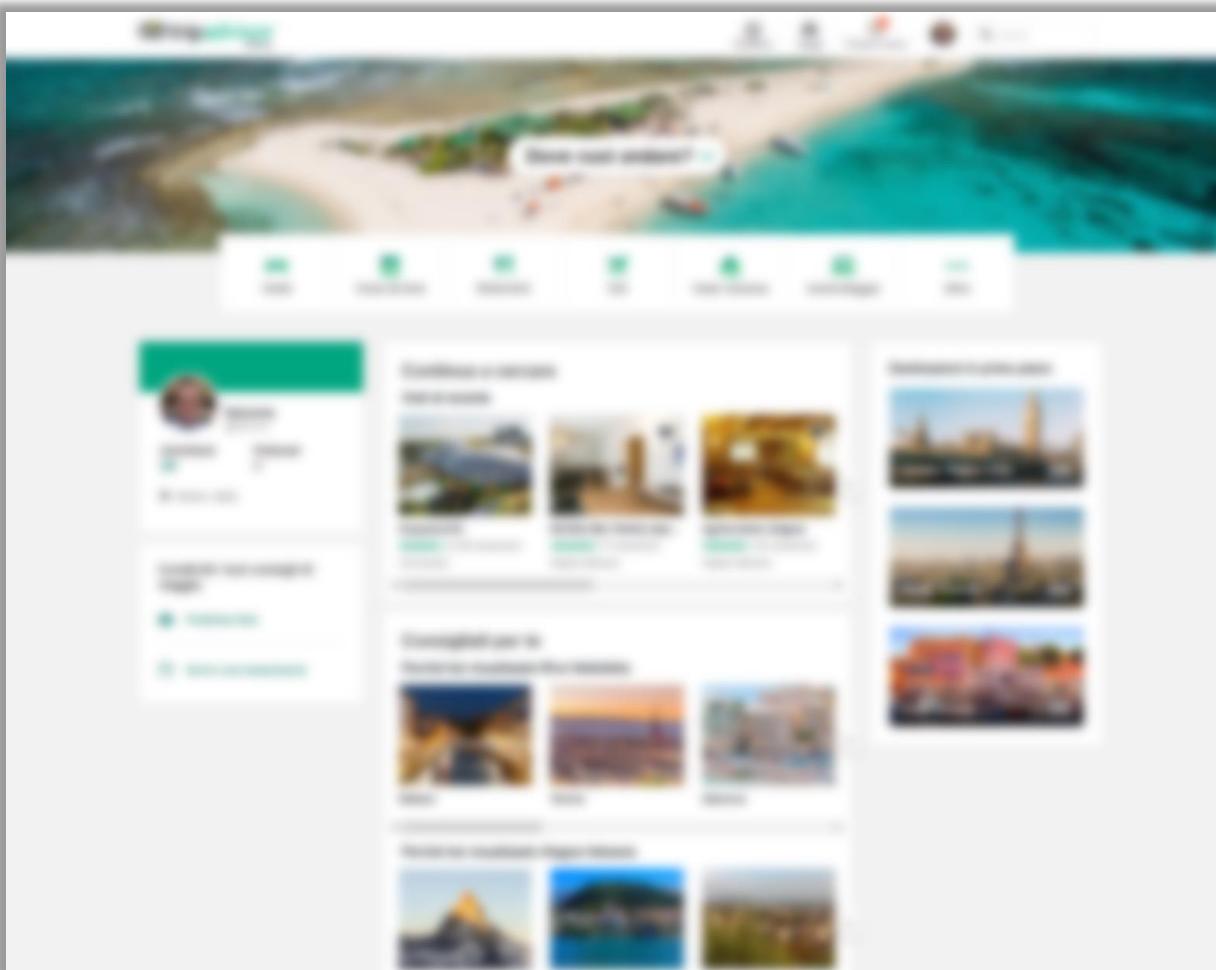
Recognizable page structure



Recognizable page structure



Recognizable page structure

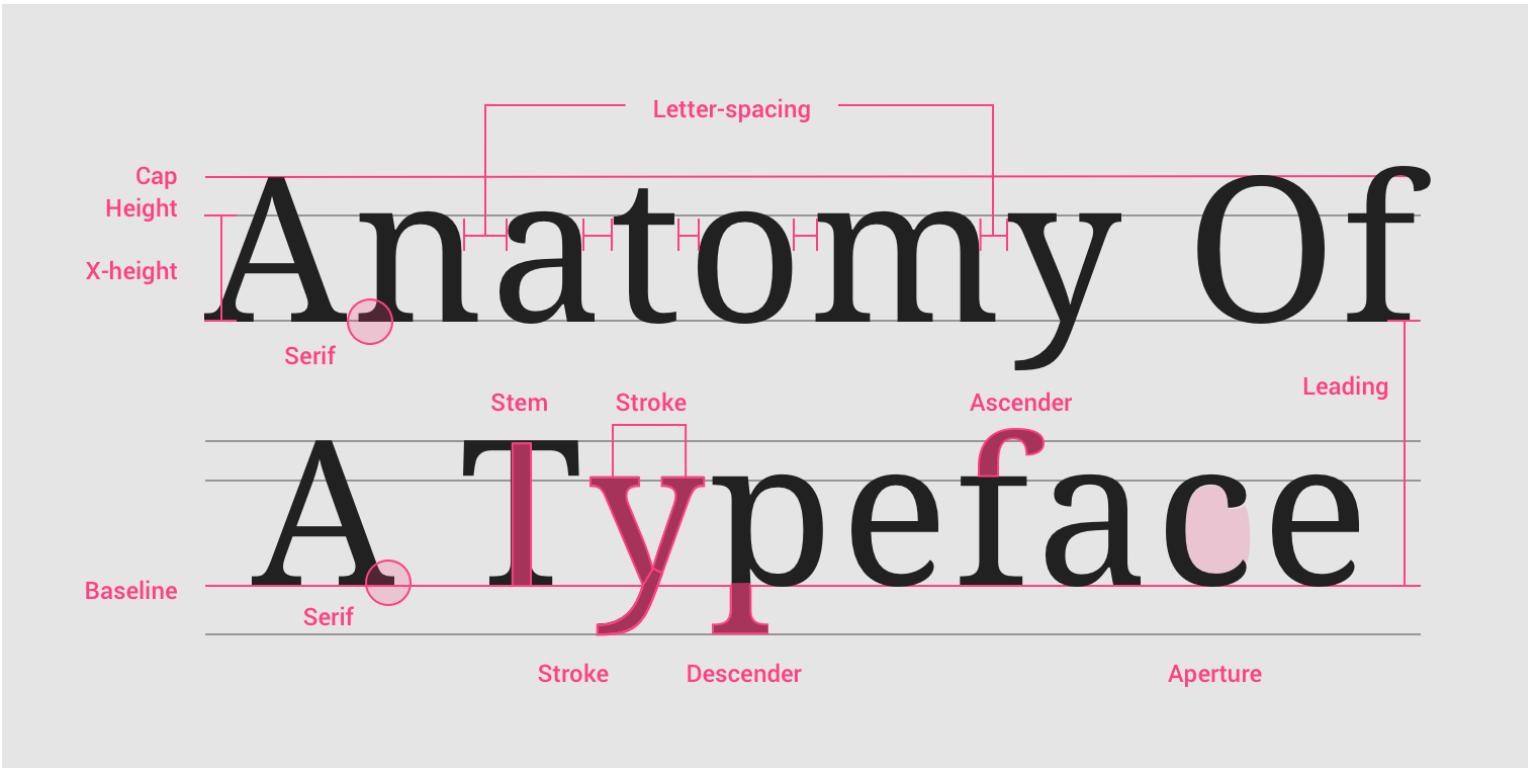


Typography

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

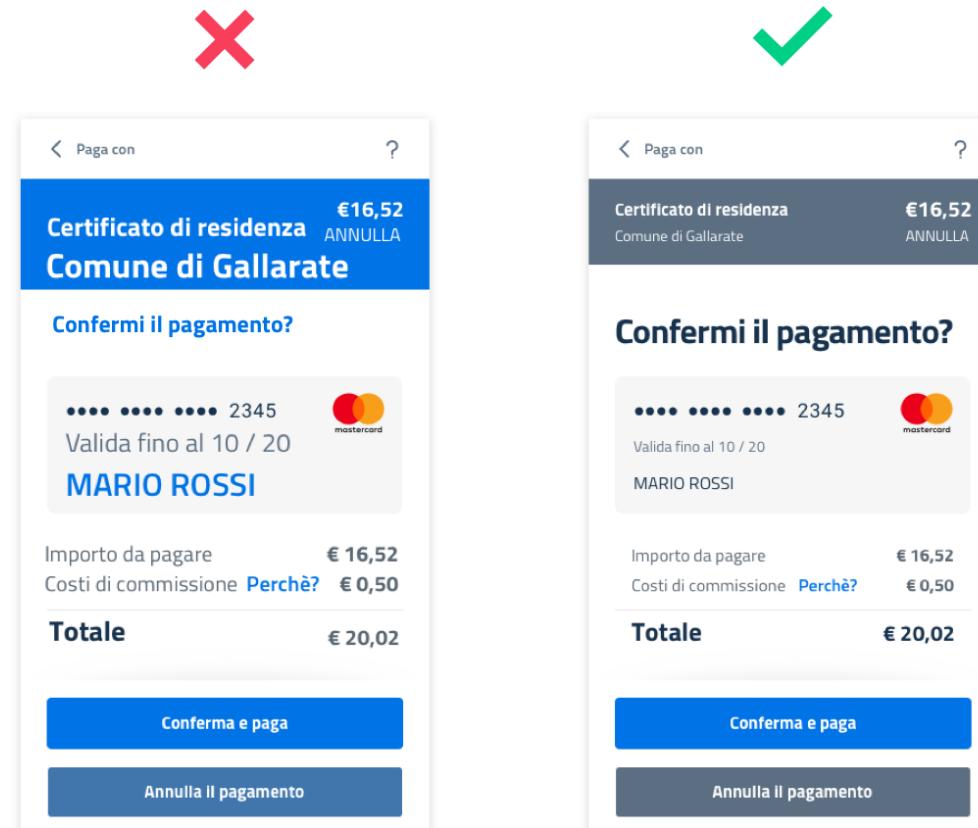
Scale Category	Typeface	Font	Size	Case	Letter spacing
H1	Roboto	Light	96	Sentence	-1.5
H2	Roboto	Light	60	Sentence	-0.5
H3	Roboto	Regular	48	Sentence	0
H4	Roboto	Regular	34	Sentence	0.25
H5	Roboto	Regular	24	Sentence	0
H6	Roboto	Medium	20	Sentence	0.15
Subtitle 1	Roboto	Regular	16	Sentence	0.15
Subtitle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

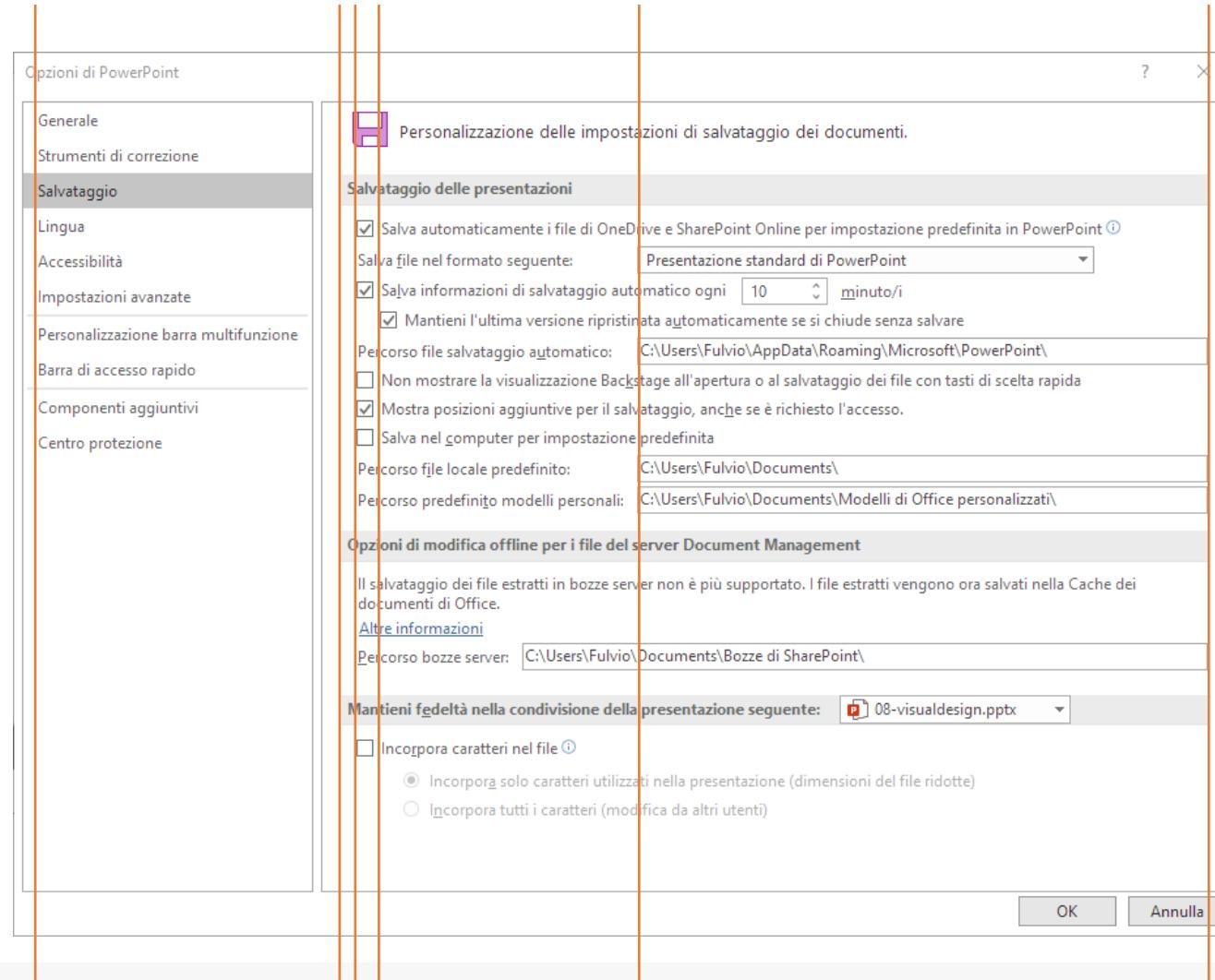
Grids and Alignment

Exploiting grouping and alignment to convey content, at different levels

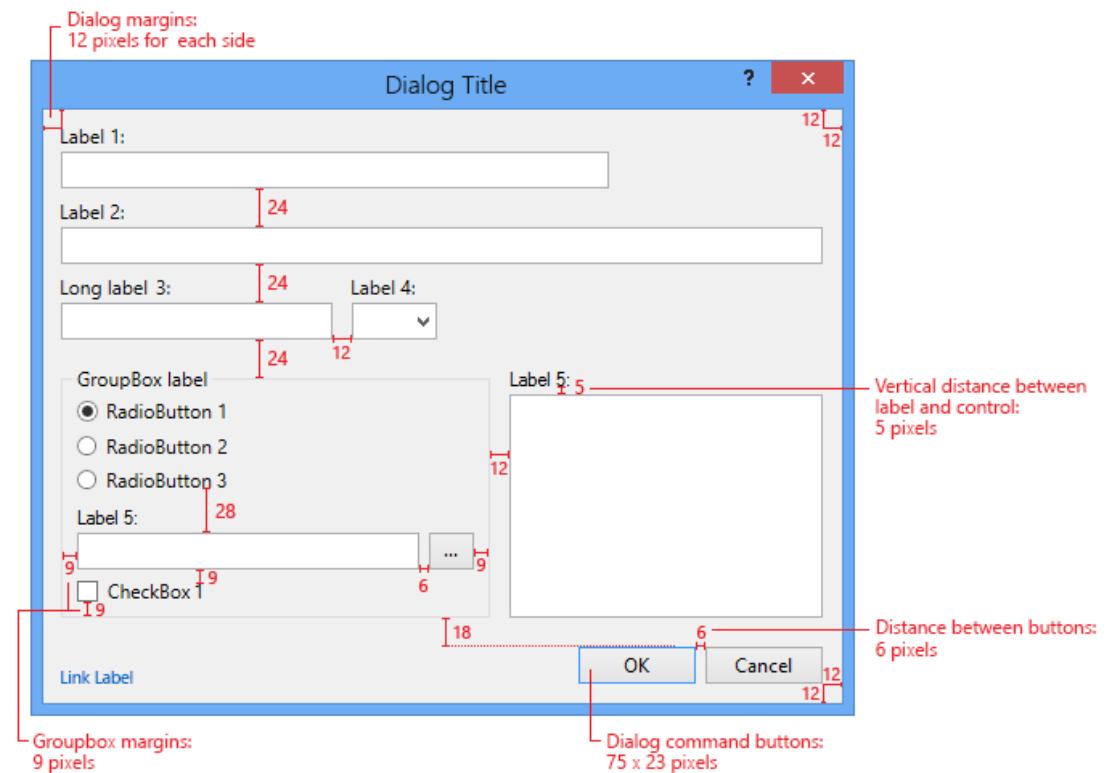
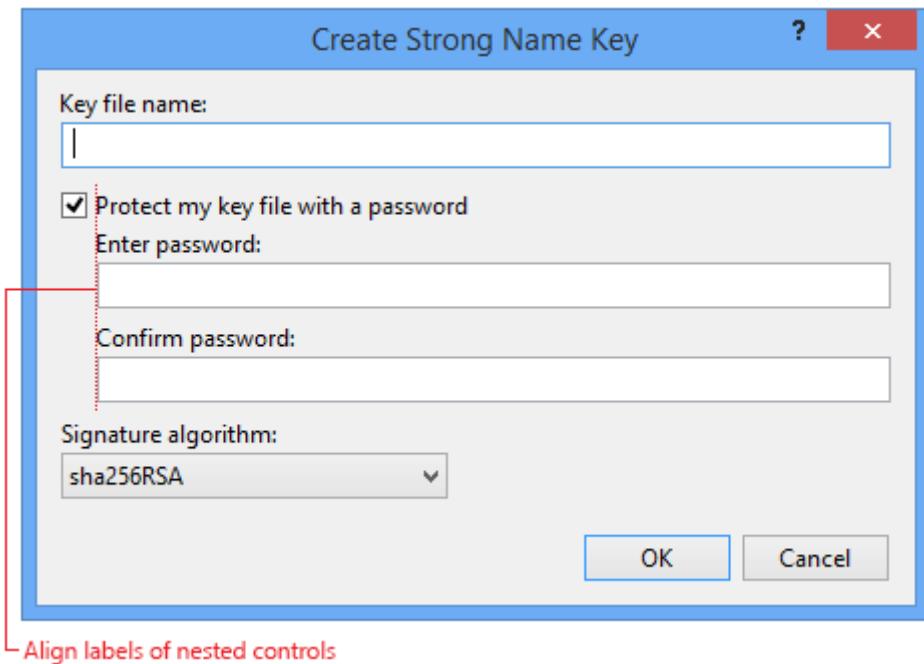
Alignment

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

Example

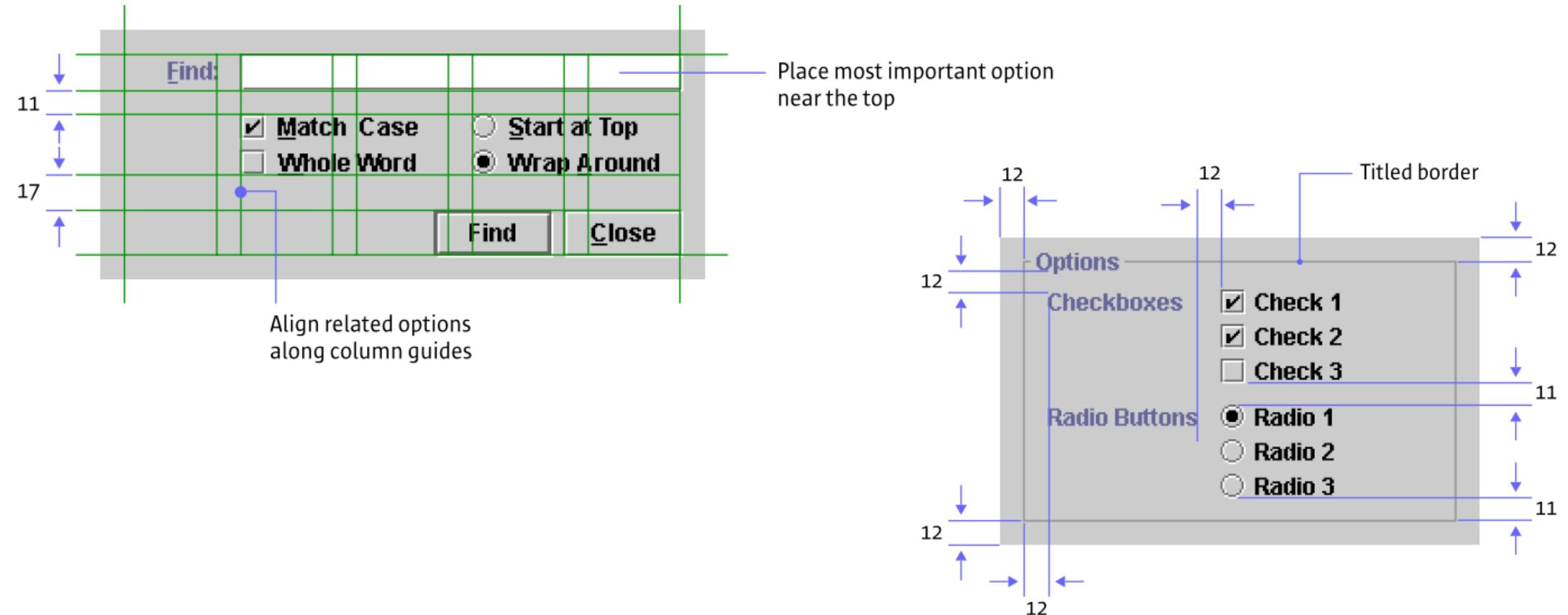


Examples



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

Examples

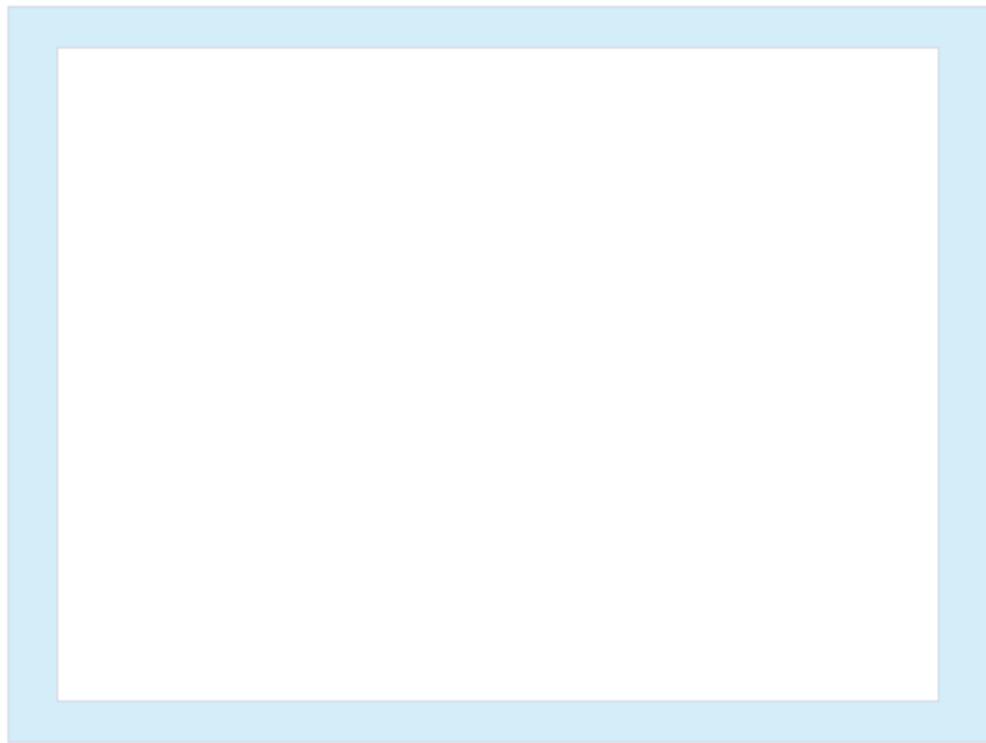


Grid Layout Ingredients

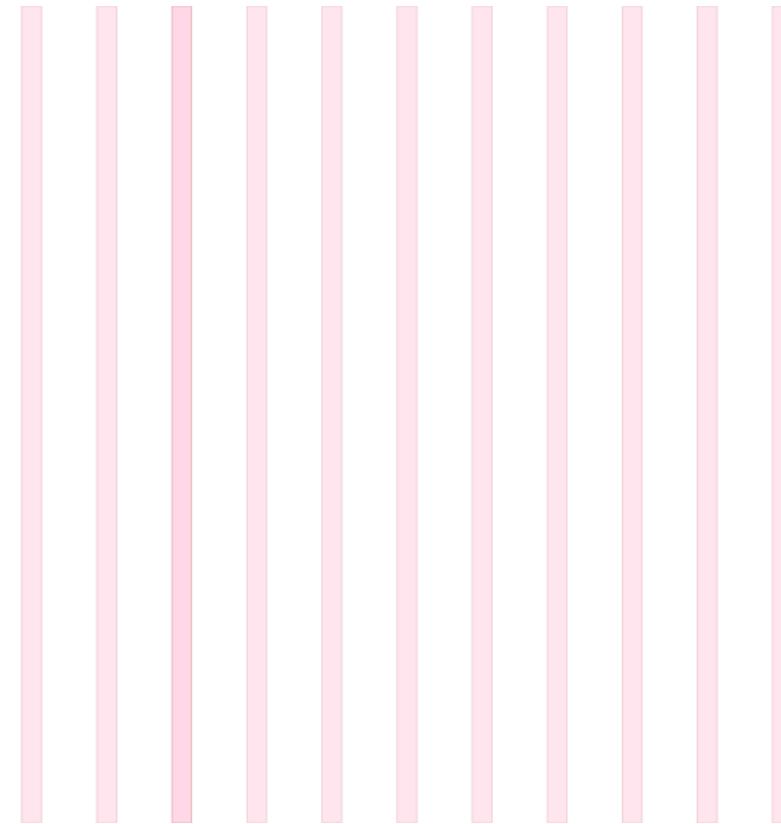
- **Guides:** The edge which you choose to align content with
- **Column:** A vertical division of content
- **Row:** A horizontal division of content
- **Margins:** The area surrounding your content
- **Gutters:** The margins between columns
- **Hang-line:** A horizontal guide to align content to hang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

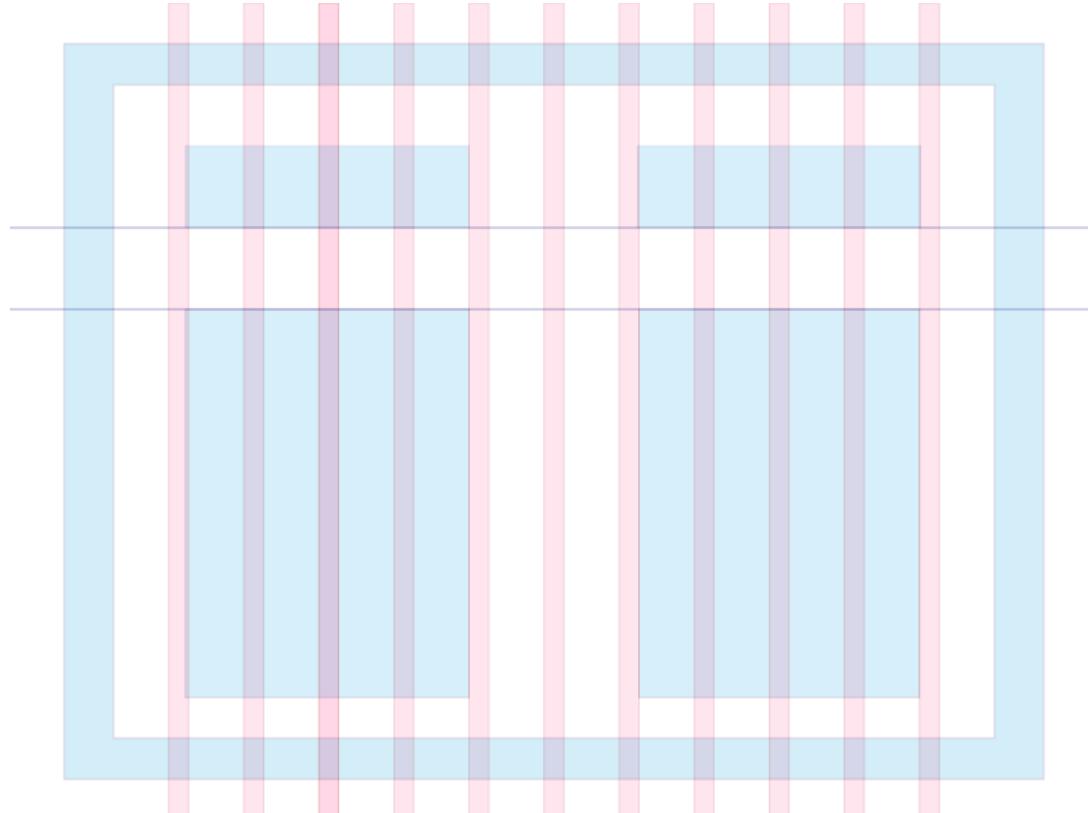


Columns & Gutters



Grid Layout Ingredients

Hanglines and Baselines

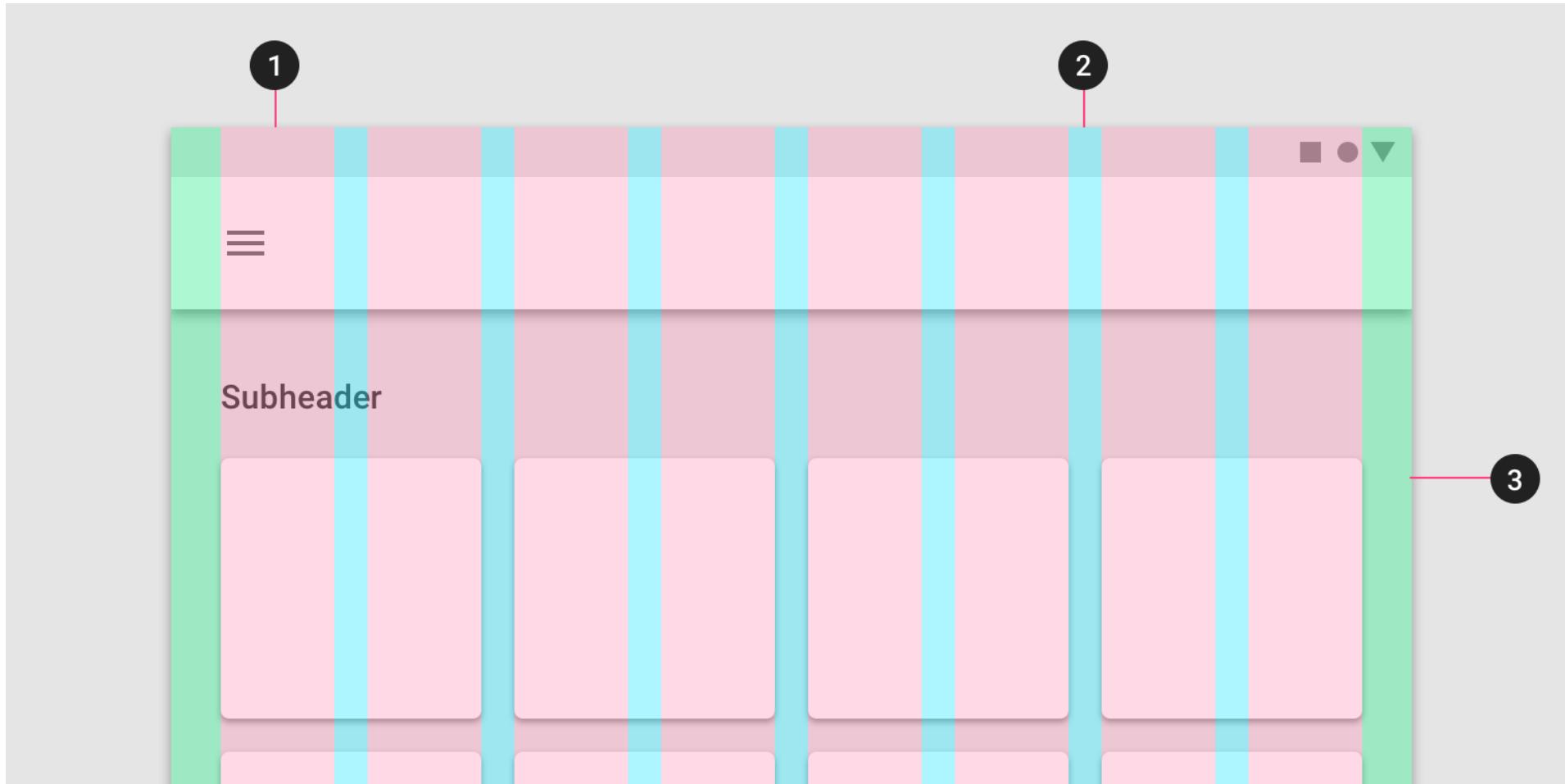


Baseline Grids



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

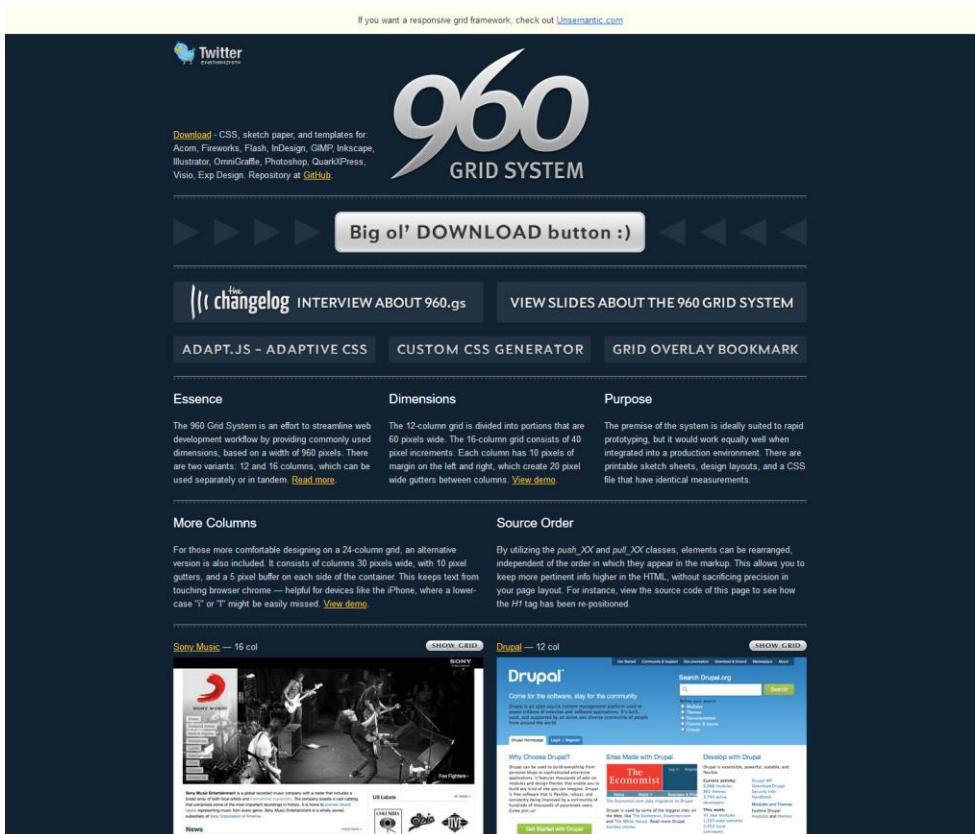
The image shows four screenshots of a website titled "Learn to Create Websites" from "Tutorial Republic". The layout is a responsive grid using Bootstrap's row and column classes. The first screenshot shows a desktop view with six columns: HTML, CSS, JavaScript, Bootstrap, PHP, and SQL. The second screenshot shows a tablet view with five columns: HTML, CSS, JavaScript, Bootstrap, and PHP. The third screenshot shows a smartphone view with three columns: HTML, CSS, and JavaScript. The fourth screenshot shows a very narrow view with two columns: HTML and JavaScript. A yellow callout box highlights the HTML section of the first screenshot, containing the following code:

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

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

Other grid systems

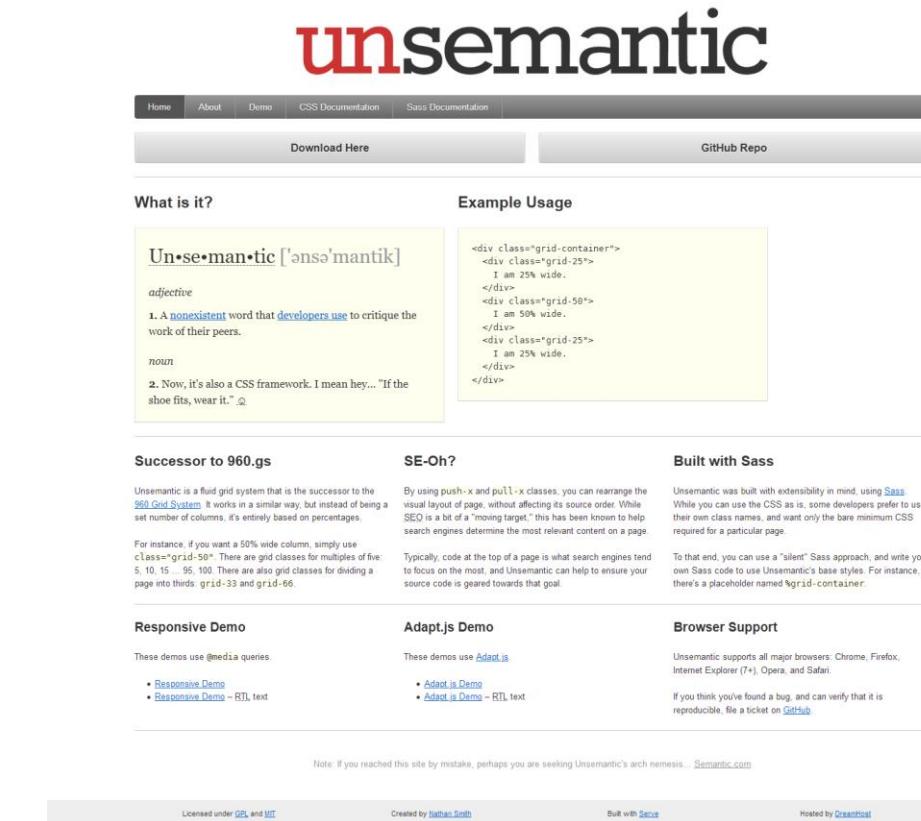
960 grid (fixed width, 12 or 16 col)



The screenshot shows the homepage of the 960 Grid System. At the top, there's a navigation bar with links for Home, About, Demo, CSS Documentation, and Sass Documentation. Below the navigation is a large "Download Here" button. The main content area features a large "960 GRID SYSTEM" logo. To the left of the logo is a Twitter sidebar with a "Big ol' DOWNLOAD button :)" button. Below the logo are sections for "changelog", "INTERVIEW ABOUT 960.gs", "VIEW SLIDES ABOUT THE 960 GRID SYSTEM", "ADAPT.JS - ADAPTIVE CSS", "CUSTOM CSS GENERATOR", and "GRID OVERLAY BOOKMARK". The central content area has three columns: "Essence", "Dimensions", and "Purpose". The "Dimensions" section describes the 12-column grid as being divided into 40 60-pixel-wide columns. The "Purpose" section explains how the system allows for rapid prototyping and equal performance across different environments. Below these are sections for "More Columns" and "Source Order", which discuss how the system handles responsive design by rearranging elements based on their position in the markup. At the bottom, there are examples of websites using the 960 grid, including Sony Music (16 col) and Drupal (12 col).

<https://960.gs/>

Unsemantic (responsive, based on %)



The screenshot shows the homepage of the Unsemantic website. The header includes a navigation bar with Home, About, Demo, CSS Documentation, and Sass Documentation, along with a "Download Here" button and a GitHub Repo link. The main title "unsemantic" is prominently displayed in red and black. Below the title, there are two main sections: "What is it?" and "Example Usage". The "What is it?" section defines "Un•se•man•tic" as an adjective and a nonexistent word used to critique peers. It also describes it as a CSS framework that allows for flexible layout. The "Example Usage" section shows a snippet of CSS code for a grid container with 5 columns of varying widths. Below these sections are several other demo and documentation pages: Successor to 960.gs, SE-Oh?, Built with Sass, Responsive Demo, Adapt.js Demo, and Browser Support.

<https://unsemantic.com/>

Grid structure

Main body:
Mix of 2x and 3x
columns

Alternating row
types



Title area outside the grid

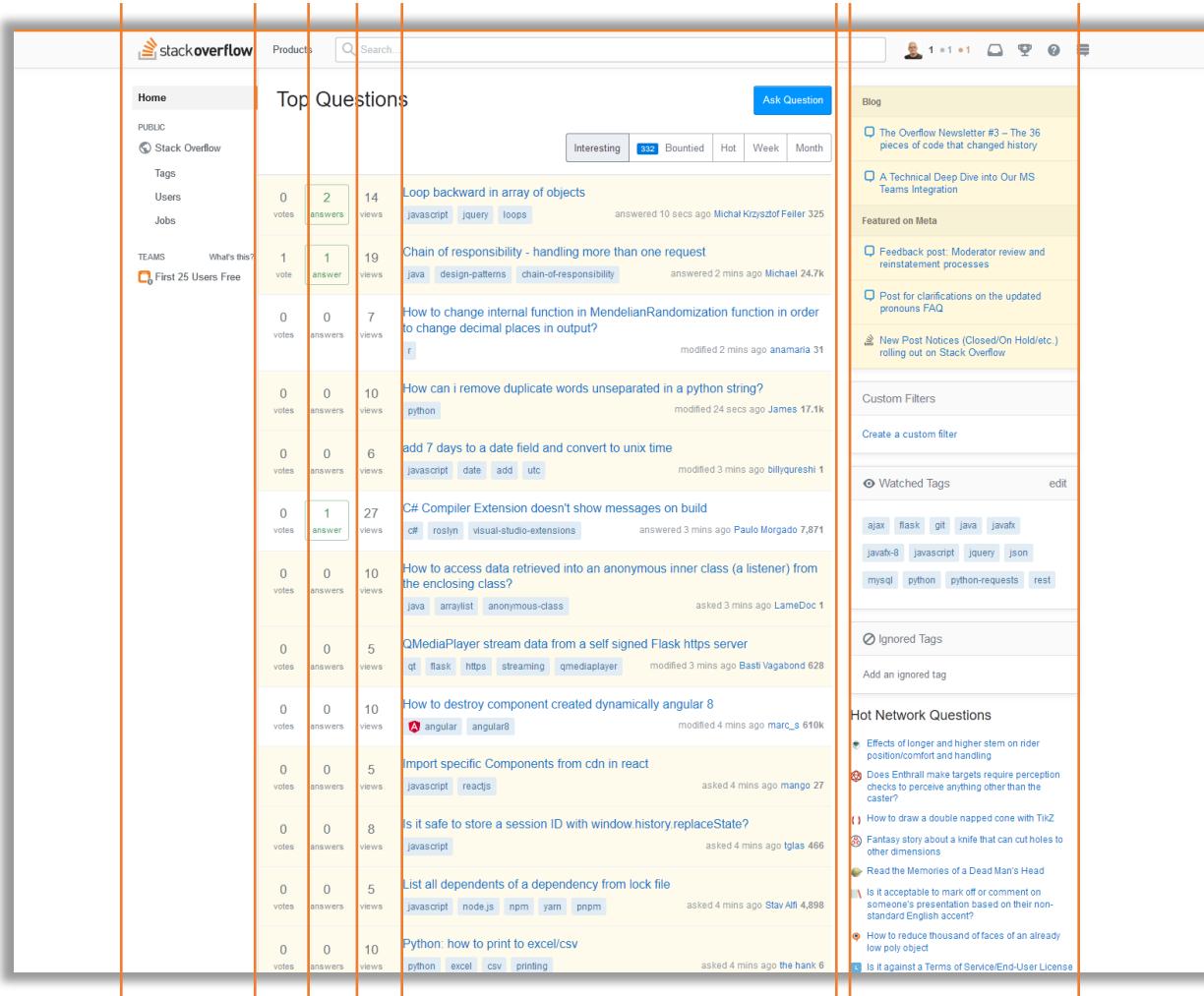
Right column for other types of articles

Grid structure

Main content
(center, wide)

Navigation
(left, smaller)

Related content
(right, smaller)



Example

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

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...

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

LINGS CARS.com

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

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

Stop

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

4 News

PUBLIC PICCADILLY

Leader of the Pack

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

BREXIT RISK FREE! February 2017 theguardian

CARS A-Z

ABARTH

124 Spider Convertible
595 Convertible
595 Hatchback
695 Convertible

ALFA ROMEO

Giulia Saloon
Giulietta
Stelvio Estate

AUDI

500 IDEAS!

NICOLE...PAPA!

MEGA-HATCH!

Fiat 500

1.2 Pop 8v (69bhp) (4 seats)
Hatchback 3dr 124cc Petrol Manual (5 Speed)

Rent New £127/mth including VAT

Renault Clio

0.9 TCE Iconic 12v (90bhp)
Hatchback 5dr 898cc Petrol Manual (5 Speed)

Rent New £152/mth including VAT

Citroen C3

1.2 PureTech 12v (83bhp) Flair
Hatchback 5dr Manual 1199cc

Rent New £157/mth including VAT

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

1 DELIVERY TODAY

Ford Ka+ to Arthur ATTLEBOROUGH, NR17

21 DELIVERIES IN LAST WEEK

Renault Captur to Cath PONTERFRACT , WF81

Mercedes GLC Coupe to Bill BEDLINGTON, NE22

BMW 2 Series Convert... to Pingu DERBY, DE56

Nissan Qashqai to Arlene GLASGOW , G11

Volvo XC60 Estate to Saif MILTON KEYNES, MK8

Seat Leon to Ben BARNESLEY, S70

Skoda Kodiaq Estate to Hannah HAY-ON-WYE , HR3

Renault Clio to Paul MIDDLEBROUGH , TS7

Renault Clio to Paul MIDDLEBROUGH , TS7

Seat Arona to Steve LONDON, SE18

Seat Leon to Adam HATFIELD, AL10

Audi A3 Sportback to Chris WYMONDHAM , NR18

Fun 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

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 website's homepage, illustrating a comparison between a standard view and a collapsed or compacted view.

Left Screenshot (Standard View):

- Header:** Shows the Stack Overflow logo, navigation links for "Products" and "Search", and user stats: 1 + 1 + 1.
- Top Questions Section:** Displays a list of top questions with detailed information like title, votes, answers, views, and asker details.
- Right Sidebar:** Contains sections for "Blog", "Featured on Meta", "Custom Filters", "Watched Tags", and "Ignored Tags".
- Bottom Section:** Shows "Hot Network Questions" with their titles and brief descriptions.

Right Screenshot (Collapsed View):

- Header:** Similar to the left, showing the Stack Overflow logo, navigation, and user stats.
- Top Questions Section:** Shows the same list of top questions as the left screenshot.
- Right Sidebar:** Contains sections for "Blog", "Featured on Meta", "Custom Filters", "Watched Tags", and "Ignored Tags".
- Bottom Section:** Shows the same "Hot Network Questions" as the left screenshot.

The main difference between the two screenshots is the visibility of the sidebar and the sidebar sections. In the collapsed view, the sidebar appears narrower, and some of the sidebar sections (like "Custom Filters" and "Ignored Tags") are partially visible or require scrolling to see.

Example

The image displays two side-by-side screenshots of the Politecnico di Torino website. Both screenshots show the homepage with a dark blue header containing the university's logo, name, and navigation links: ITA | ENG | Login | argomenti o persone. Below the header, there are five main menu items: SCOPRIRE L'ATENEO, DIDATTICA E STUDENTI, IL MONDO DELLA RICERCA, INNOVAZIONE PER LE IMPRESE, and CAMPUS INTERNAZIONALE.

The central part of both screenshots features a large graphic of a stylized 'T' composed of many small vertical bars, with the text "festival della TECNOLOGIA" and "TORINO, 7-10 NOV 2019" overlaid. Below this, a purple banner reads "Tecnologia è Umanità".

At the bottom of each screenshot, there are sections for "EVENTI" and "AVVISI E SCADENZE" with various event details and deadlines. On the right side of each screenshot, there is a sidebar titled "ACCESSO RAPIDO" with links to "Apply@PolTo", "Iscrizioni online", and several other university services.

The key difference between the two screenshots is the background color of the header. In the left screenshot, the header is dark blue, making the white text and links difficult to read. In the right screenshot, the header is black, and the text and links are highlighted in a bright orange color, significantly improving readability. A dashed orange box highlights the header area in the right screenshot to emphasize the change.

Palettes

Allegato 1

ABACO COLORI POLITO

BLU

PANTONE	CMYK
288 CVP	100/80/0/30
90%	90%
80%	80%
70%	70%
60%	60%
50%	50%

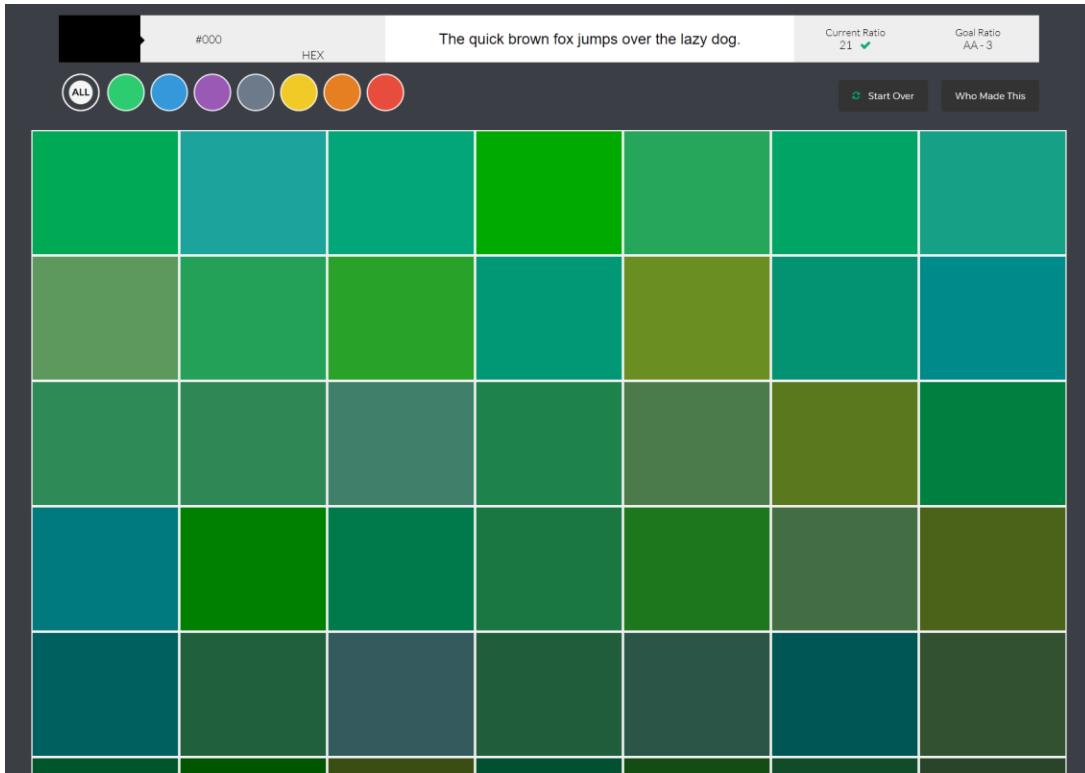
ARANCIO

PANTONE	CMYK
ORANGE 021	0/70/90/0
137 CVP	0/60/90/0
130 CVP	0/50/90/0
123 CVP	0/40/90/0
0/30/90/0	0/40/100/0
0/30/100/0	130 CVP

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



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/>

Reading and Navigating

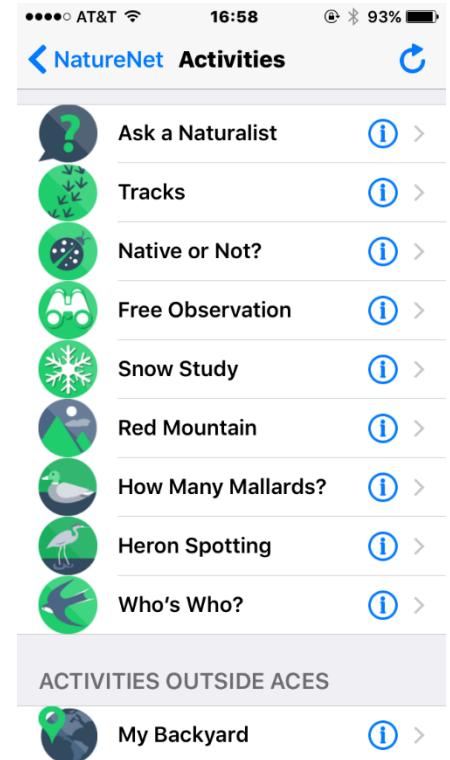
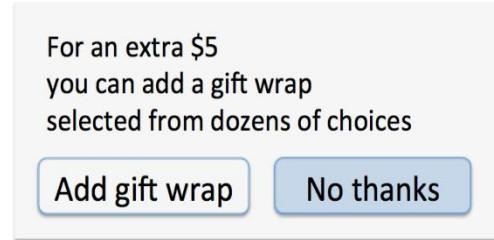
«Informavores» must quickly find the information they need

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

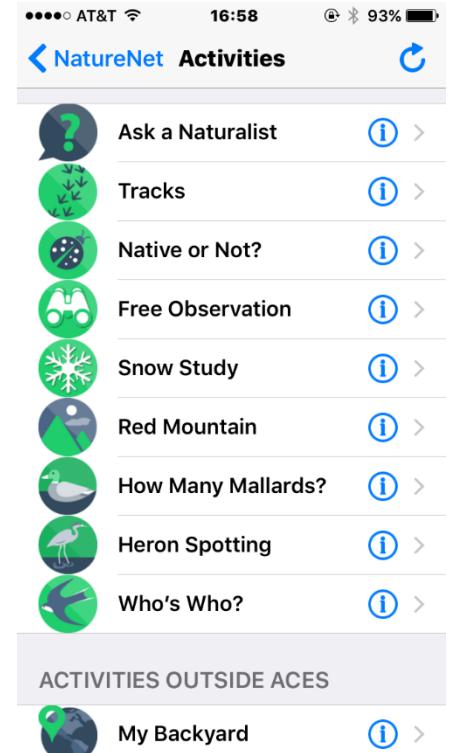
- Menu bars, pop-up menus, toolbars, palettes and ribbons
- Shortcuts and gestures for rapid interaction
- Long lists
- Linear versus simultaneous presentation



Navigation by selection

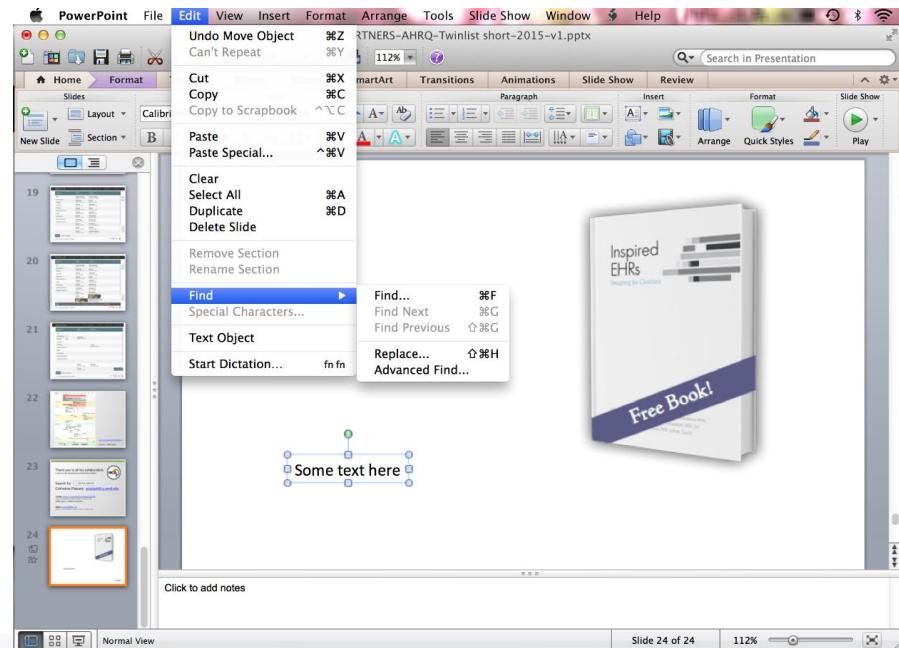
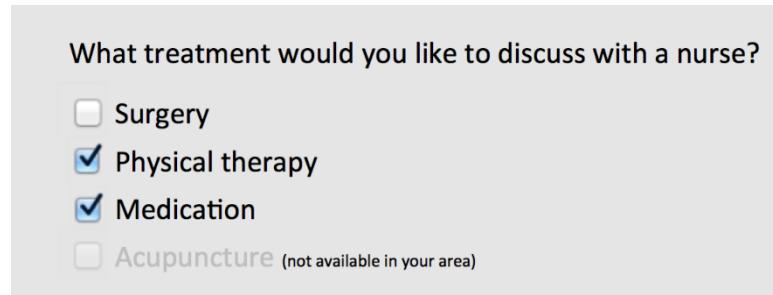
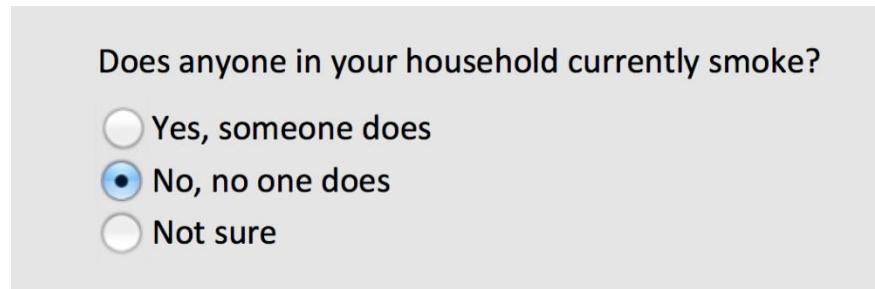
- Menu bars, pop-up menus, toolbars, palettes and ribbons
- **Shortcuts and gestures for rapid interaction**
- Long lists
- Linear versus simultaneous presentation

- 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. Another story discusses the "Martian" Director Ridley Scott's comments on NASA's journey to Mars. There are also sections for "Eclipse", "NASA Scientist Sheds Light on Rare Sept. 27 Supermoon Eclipse", "The Real Martians", "Space Travel", and "SDO Solar Mission". The footer contains links to National Aeronautics and Space Administration, NASA Official: Brian Dunbar, and various agency reports.

The screenshot shows the NASA TV website homepage. The menu is much simpler, featuring only the NASA logo, a search bar, and a navigation icon. The main content area displays a video player showing two astronauts working on the International Space Station. Below the video, there is a section titled "One-Year Crew" and "Halfway There". Further down, there is another video player showing three people in a laboratory setting.

Content organization

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

Tree-like content organization

Screenshot of the REI website illustrating tree-like content organization.

The top navigation bar includes: Help, Wish List, Gift Registry, Classes & Events, Store Locator, 0 items in the shopping cart, and Checkout.

Welcome message: Welcome to REI! | Log In or Register

FREE SHIPPING With \$50 minimum purchase.

Main menu categories: SHOP REI, SHOP REI OUTLET, TRAVEL WITH REI, LEARN, BLOG, MEMBERSHIP, STEWARDSHIP.

Sub-categories under SHOP REI: Camp & Hike, Climb, Cycle, Fitness, Run, Paddle, Snow, Travel, Men, Women, Kids, Footwear, More, Deals.

Category sections:

- 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.
- Bike Components**: Brakes, Saddles/Seat Posts, Tires, Tubes and Wheels, Tools and Maintenance, Drivetrain Components, Pedals, Handlebars.
- Messengers/Backpacks**: Panniers/Bike Bags.

A promotional sidebar: GIVE THE GIFT OF GEAR ANYTIME, ANYWHERE. REI gift & e-gift cards. Buy now >

Filtering options: Deals (31), Features (Moisture wicking, Quick drying, Sun-protective fabric, Waterproof, Insulated, Earflaps, Made in USA), See 8 More, Brand (Clear, 686).

Product grid:

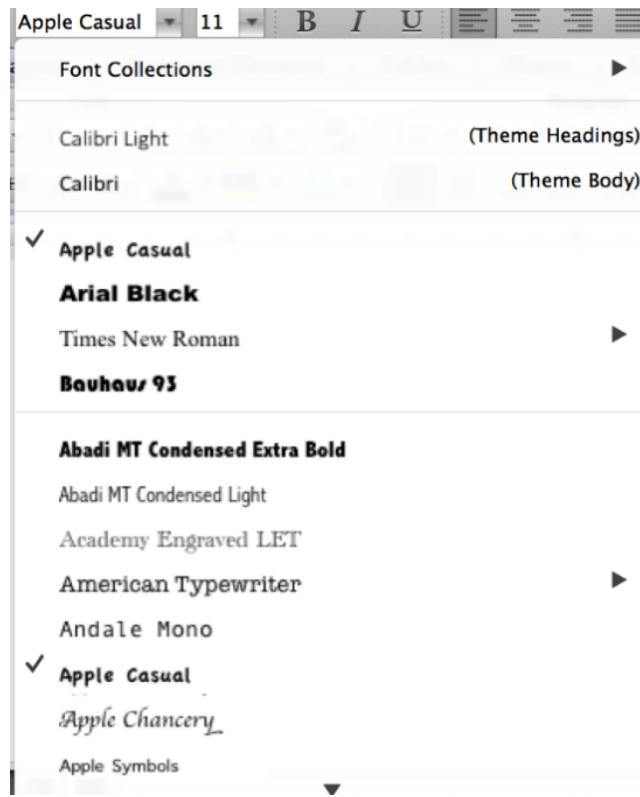
- REI Rainwall Rain Jacket - Girls': 4.5 stars (1), \$31.83 - \$64.50, Compare.
- REI Rainwall Rain Pants - Kids': 4.5 stars (1), \$49.50, Compare.
- REI Sahara Convertible Pants - Girls': 4.5 stars (9), \$44.50, Compare.
- ONLY AT REI: REI Rainwall Rain Jacket - Girls' (black), REI Rainwall Rain Pants - Kids' (black), REI Sahara Convertible Pants - Girls' (purple).

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)

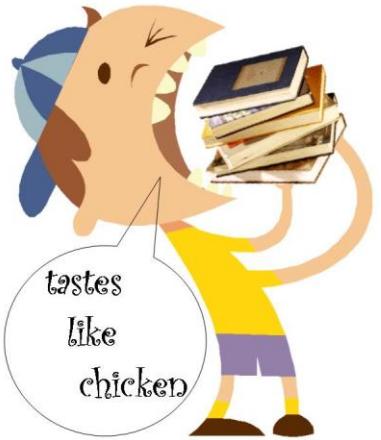
Menu grouping (example)

- 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...

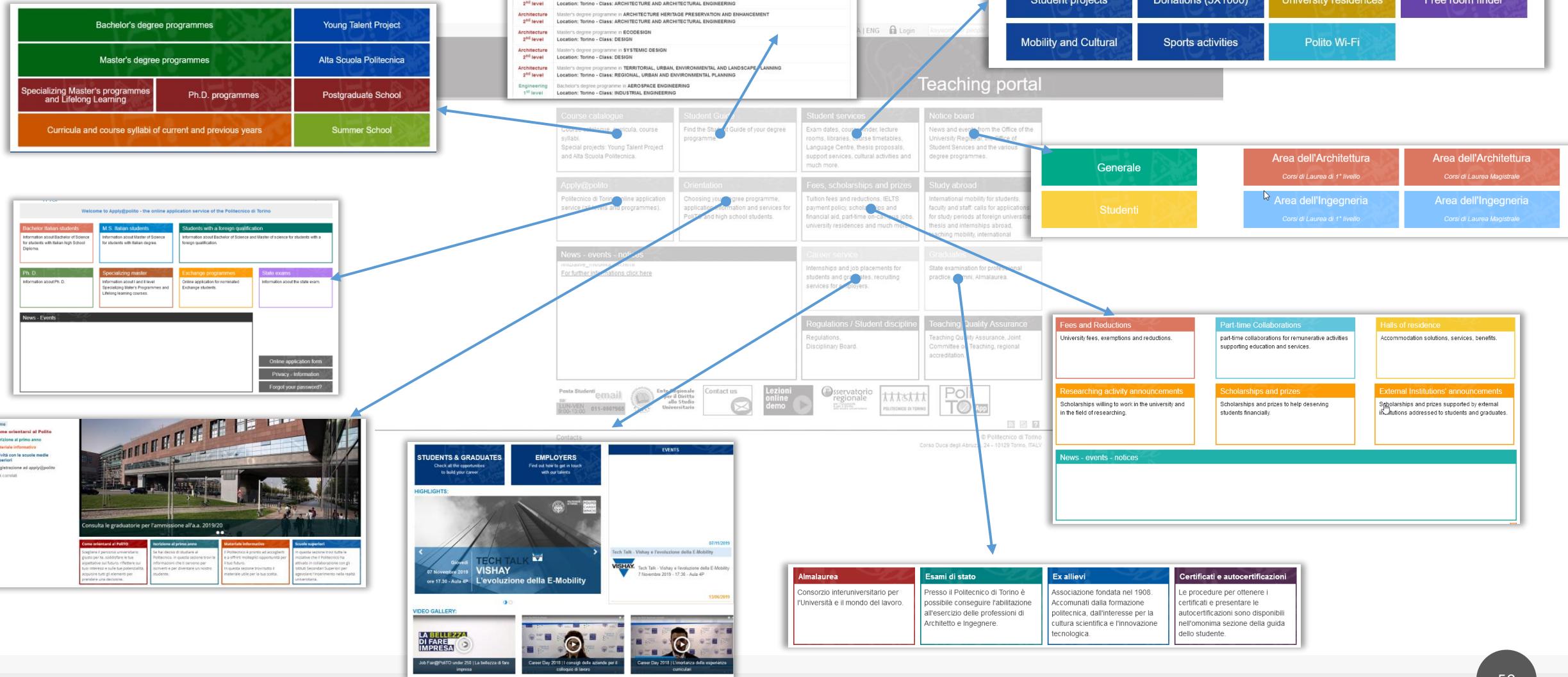
Example

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' (highlighted in blue), 'Teaching' (orange), 'Research' (red), 'Business' (purple), and 'International Campus' (yellow). Below the navigation bar is the Politecnico di Torino logo and the text 'POLITECNICO DI TORINO'. A search bar and a login link are also present. The main content area is titled 'Teaching portal' and features several colored boxes with links:

- 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.
- 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 of the page, there are links for 'Posta Studenti', 'email' (with a phone number 011-8997965), 'Ente Regionale per il Diritto allo Studio Universitario' (with a logo), 'Contact us' (with an envelope icon), 'Lezioni online demo' (with a play button icon), 'Osservatorio regionale' (with a green circular logo), 'POLITECNICO DI TORINO' (with a blue circular logo), and 'PoliTO App' (with a smartphone icon). There are also social media icons for YouTube, Facebook, and Twitter. The footer contains the text '© Politecnico di Torino Corso Duca degli Abruzzi, 24 - 10129 Torino, ITALY'.

Example



Example

Survey@Polito

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

Survey Smart Home Survey (ID:365355)

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

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

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

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

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

Start date/time: -

Expiry date/time: -

Template: default

Base language: English

Additional languages: French
German
Italian
Portuguese
Spanish

End URL: e-Lite research group webpage

Number of questions/groups: 11/3

Survey currently active: Yes

Survey table name: beta_survey_365355

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

LimeSurvey Version 1.92+ Build 120919

Common Problems

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

Icons

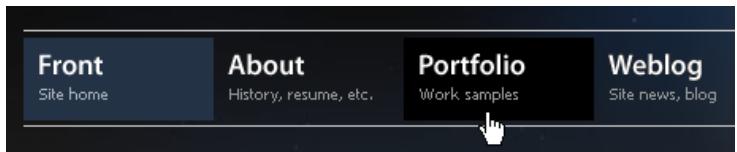
- Icons facilitate recognition over recall
 - When they are consistently used, and frequently visible
- Redundant coding helps recognition and memorization
 - Icon + Text + Tooltip + Context



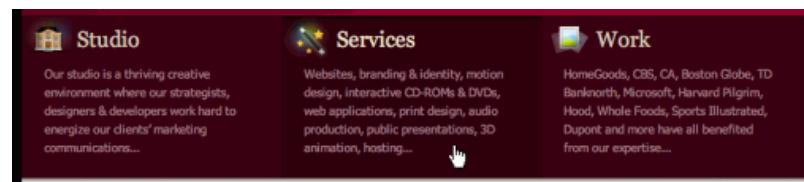
Links

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

“Speaking” block navigation



A vertical navigation menu. It includes: '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 vertical navigation menu. It includes: 'Newsletter' (Free newsletter), 'Store' (Maximize your ministry), 'Events' (Attend an event near you, ), 'Podcast' (Free audio training), 'Coaching' (Networks for Worship Leaders), and 'free resources'.

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](#)

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/>

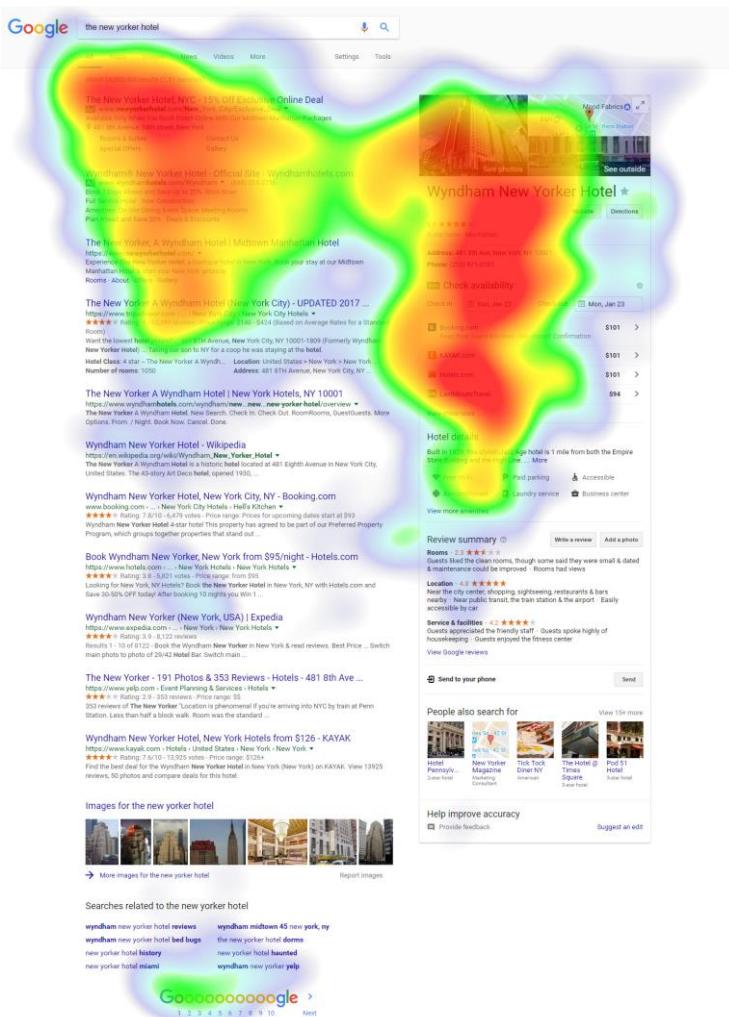
Location on the page

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

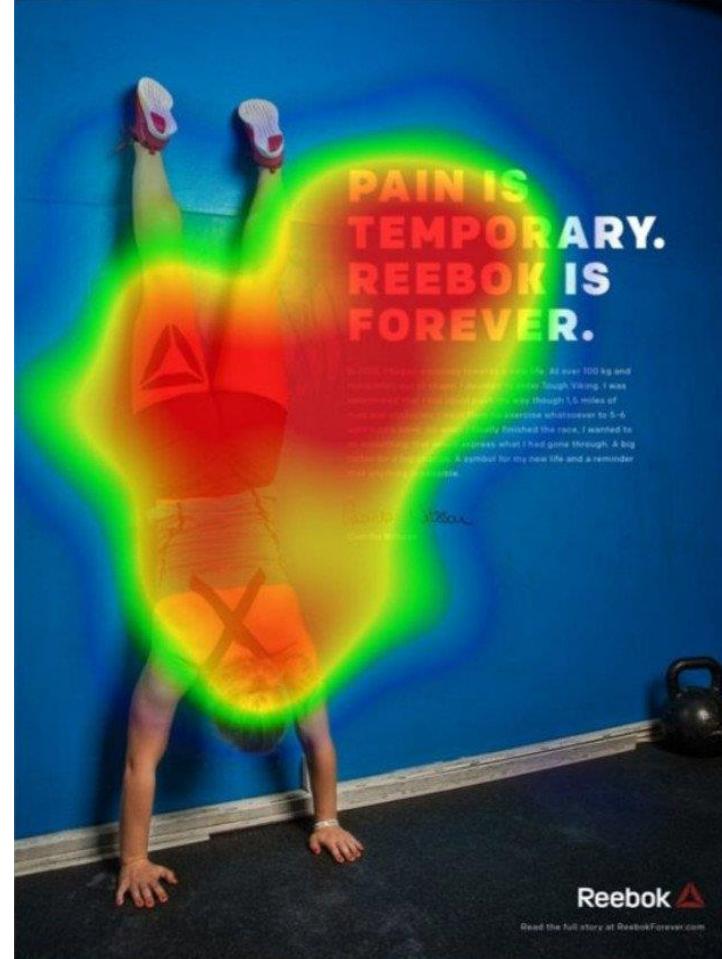
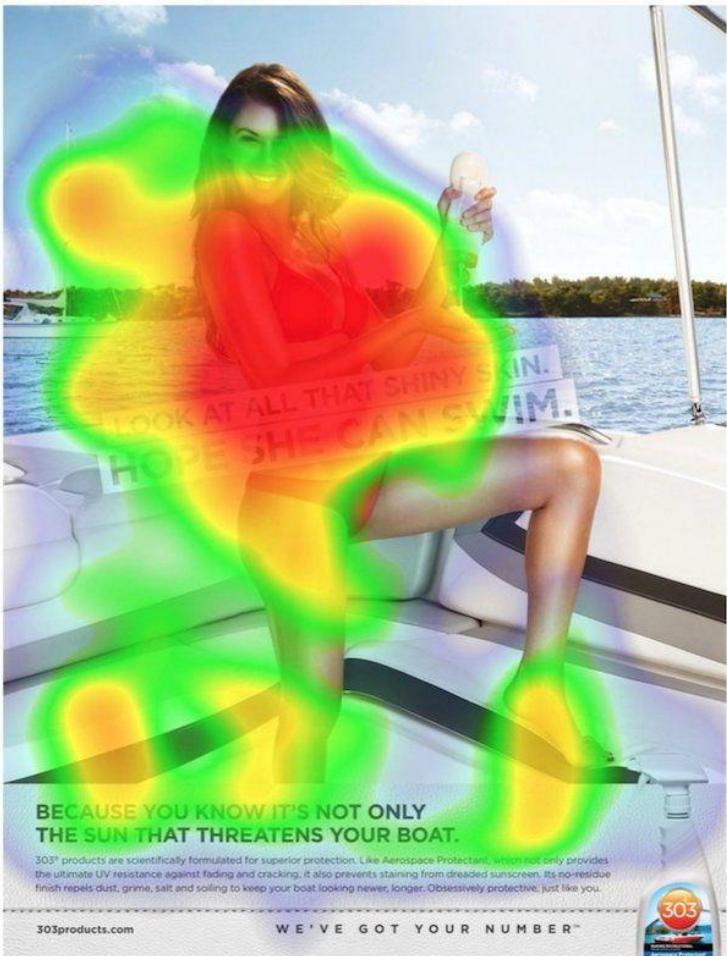
Search “eye tracking heat map” and see the major patterns

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

F-shaped pattern



Did anyone ever look at the product name?

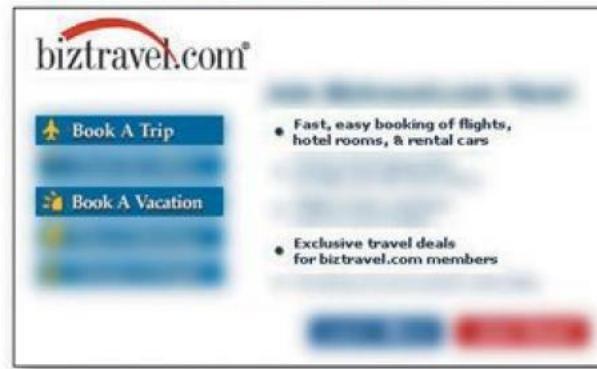


Scanning

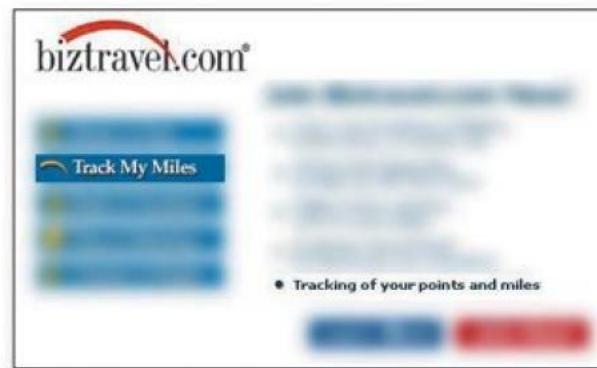
WHAT DESIGNERS BUILD...



WHAT USERS SEE...



I want to
buy a
ticket.



How do I
check my
frequent
flyer miles?

Experiment

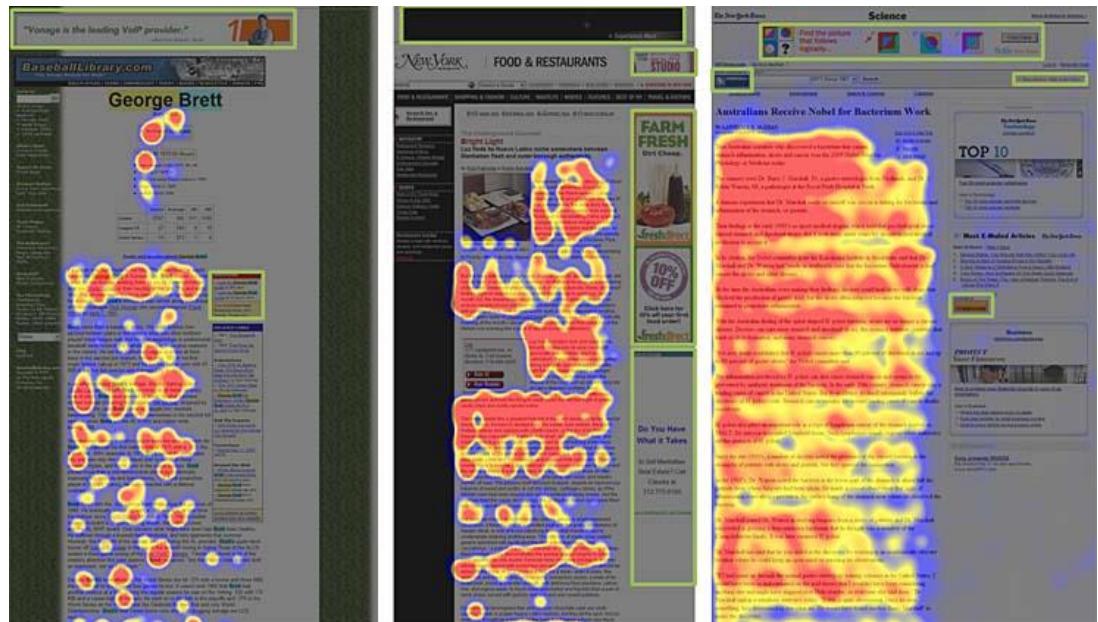
Site Version	Sample Paragraph	Usability Improvement (relative to control condition)
Promotional writing (control condition) using the "marketese" found on many commercial websites	Nebraska is filled with internationally recognized attractions that draw large crowds of people every year, without fail. 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% (by definition)
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	<p>Nebraska is filled with internationally recognized attractions that draw large crowds of people every year, without fail. In 1996, some of the most popular places were:</p> <ul style="list-style-type: none"> •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	<p>In 1996, six of the most-visited places in Nebraska were:</p> <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
- 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 designers Italia website. At the top, there's a blue header bar with the text "AgID + Team Digitale" on the left and navigation links "Piano Triennale", "Developers", "Designers" (which is underlined), "Forum", "Docs", and "GitHub" on the right. Below the header is a teal bar containing the text "'The Design System of the Italian Public Administration' [read on Speaker Deck](#)". The main content area has a white background. On the left, there's a logo for ".it designers Italia" with the tagline "dalla parte dei cittadini". In the center, a large blue-bordered box contains the text "Disegniamo **servizi digitali semplici** per **risolvere i problemi dei cittadini**" and "e restituire il **buonumore** ;)". To the left of this box is a large, semi-transparent graphic of a paper airplane. At the bottom of the page, there's a light gray footer section with a "Newsletter" sign-up form and a "Medium" social media link.

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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