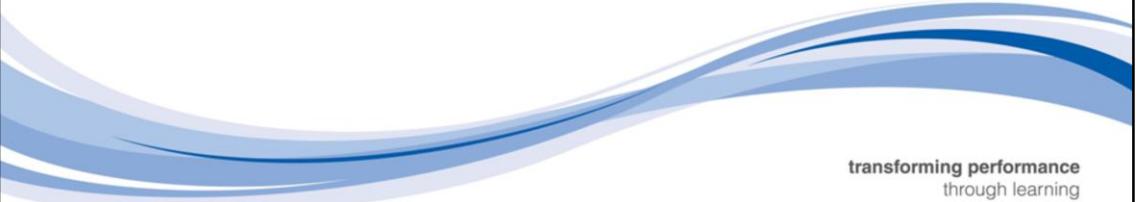




UX Fundamentals

The Surface Plane



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The Surface Plane

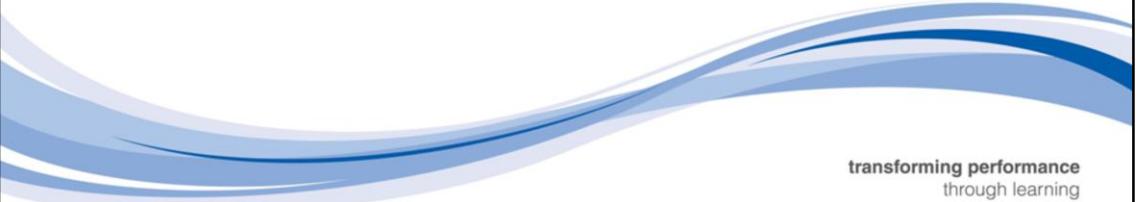
- **The surface plane is the tactile and visible interface**
 - It involves the physical assets such as colour, fonts & images
- **It is the plane which engages in sensory design**
 - Presenting logical arrangement of information
 - Enhancing the skeleton through concrete appearance decisions
- **The surface is about creating high fidelity wireframes**
 - Widgets
 - Style guides
 - Modules for design
- **It provides the basis of a style guide for physical design**

Deliverables

- **Layout**
- **Branding**
- **Colour**
- **Uniformity**
- **Mock-ups**



Consistency and Standards



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A decorative graphic at the bottom of the page features several overlapping, flowing blue and light blue curved lines that resemble waves or motion.

Creating Consistency

- By using common elements in your UI, users feel more comfortable and are able to get things done more quickly
- It is also important to create patterns in language, layout and design throughout the design to help facilitate efficiency
- Once a user learns how to do something, they should be able to transfer that skill to other parts of the product

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Create consistency and use common UI elements.

By using common elements in your UI, users feel more comfortable and are able to get things done more quickly.

It is also important to create patterns in language, layout and design throughout the design to help facilitate efficiency.

Once a user learns how to do something, they should be able to transfer that skill to other parts of the product.

Creating Consistency

- When designing your interface try to be consistent and predictable in your choice of interface elements
- Users have become familiar with elements acting in a certain way, so choosing to adopt those elements when appropriate will help with task completion, efficiency, and satisfaction

Consistent Visuals

- If a user sees a control that looks different to every other control in the product, they will assume that it is quite different, and that it works differently



See the iPod wheel; it looks different to the buttons on the iPod, and clearly works in a different way



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Consistent Visuals



- If the user has seen the same control elsewhere in the product with a different visual style, then it will look like an unfinished product
- It undermines user confidence

Consistent Behaviour



Consistency aids learnability



If the product behaves inconsistently, it is difficult for the user to know what is going on or what they need to do next

- It creates situations where mistakes are made because the user engages in behaviour that has been taught to them elsewhere in the same product



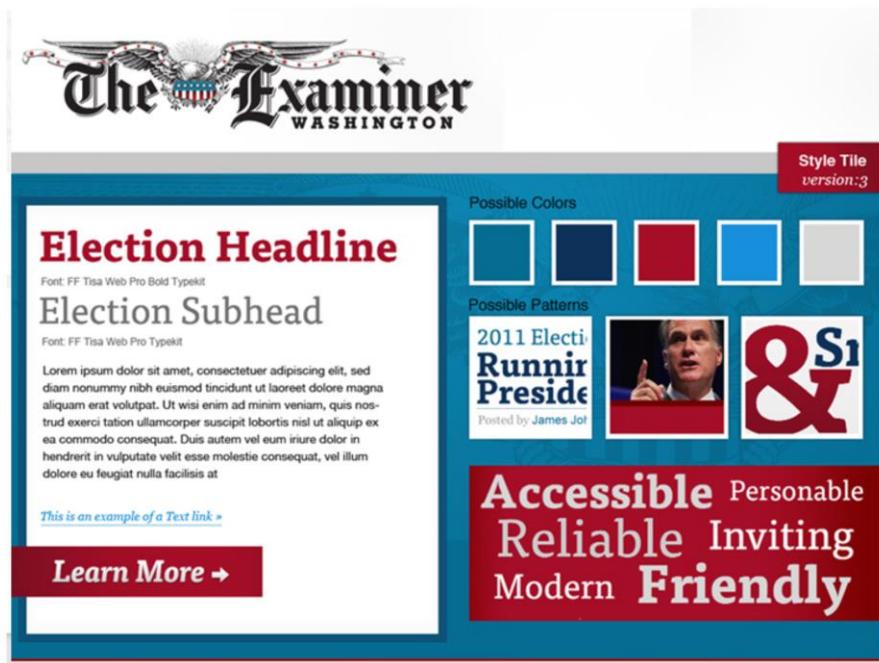
Users like predictability and do not like to be surprised

Mockup Tools

- **Mockup tools include:**

- OmniGraffle - <https://www.omnigroup.com/omnigraffle>
- Axure - <http://www.axure.com/>
- Antetype - <http://www.antetype.com/>

Style Guides



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<http://styletil.es/>



Colour



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Colour and UX

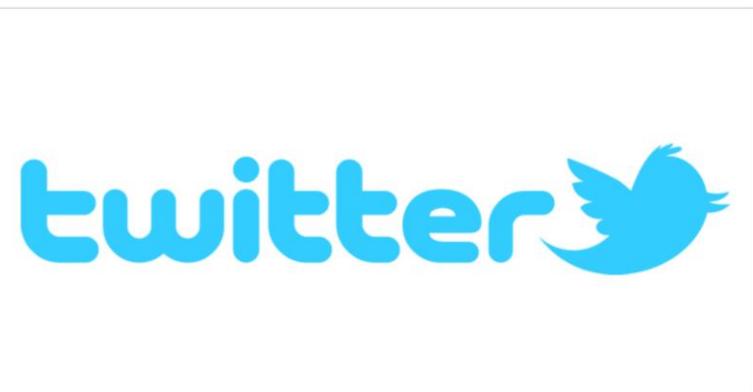
- It transmits a psychological message to your users
 - Choosing the right colours for your brand, logo or product can be vital
 - It can help your brand or product with recognition
- **The correct use of colour is vital to creating a positive image**
 - Colour plays a huge role in recognition

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Source:

<http://usabilitygeek.com/colour-user-experience-psychology/>

Blue



- **Blue is a peaceful colour, it implies trust, devotion and truth.**
 - It is perceived as trustworthy and fiscally responsible
 - It implies cleanliness

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Blue brings to mind the skies and the seas. Hence, some airlines, airports, and companies operating in the shipping industry tend to adopt this colour in their brands. Another sector where the blue colour is implemented is the high tech and computing industries due to the fact that blue is linked to intellect and knowledge. Light shades of blue are often associated with well-being, health, peace and meditation and hence can be found when looking at spas, clinics, yoga and fitness centres.

Red



- Red triggers the pituitary gland – it can have cognitive links to aggression
 - It is lively, stimulating and attention grabbing
 - Used to induce a passionate response

Green



- **Typically linked to nature, wellbeing & freshness**
 - Different shades can invoke different emotions
 - Deeper greens signify wealth and prestige
 - Lighter shades are calming and peaceful

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As opposed to red, green means safety and it can be used to advertise environment-friendly products or medical products.

Yellow



- **Yellow is associated with the sun – confidence, light & warmth**
 - The human eye sees yellow before any other colour

Purple



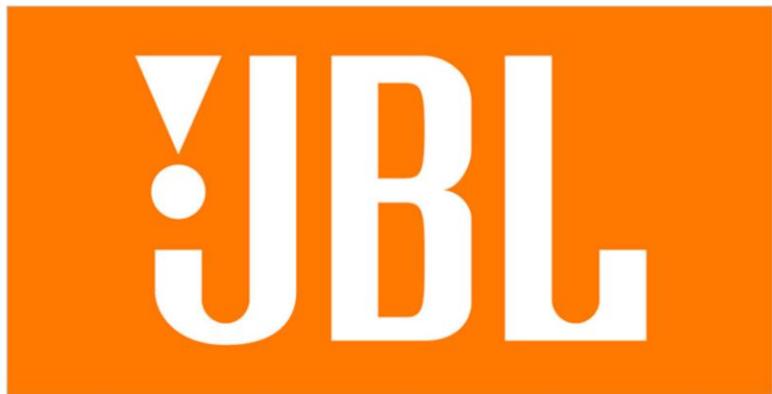
- **Purple tends to be favoured by creative (and royalty)**
 - It brings to mind mystery, superiority and mysticism
 - Hues such as lavender evoke reminiscence and sentimentality

Pink



- **Pink has a massive spectrum of emotions available depending on shade**
 - Bright pink is youthful, fun, energetic, feminine and value

Orange



- **Orange promotes liveliness, fun and energy**
 - Lighter shades appear to more upscale markets
 - Brighter shades to younger markets

Brown



- **Brown is a neutral colour – it is straightforward, steady and resilient**
 - The shade is important, it can invoke a negative response from customers who perceive it as dirty

Black



- **Black is a serious and formal colour (or the absence thereof)**
 - It is used for prestigious, sophisticated and expensive products
 - It signifies elegance and authority

White



- **White signifies cleanliness, purity and simplicity**
 - The human eye sees the brilliant colour and helps with driving home marketing messages

Developing Colour Schemes

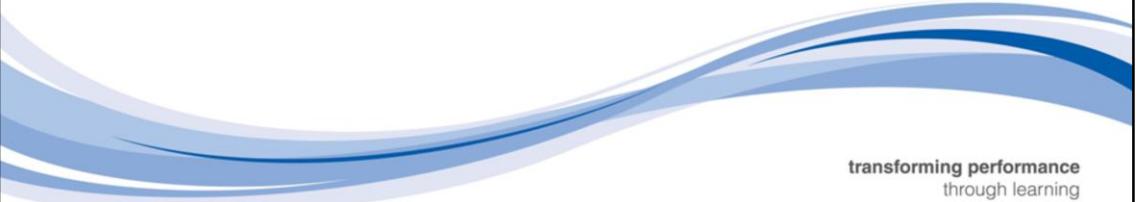


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<http://colorschemedesigner.com/>



Platforms



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Platforms Explained

 **The platform is the combination of hardware and software that enables the product to run**

- **The concept of a platform is by nature not strongly defined, but is shorthand to describe a number of important product features**
 - form factor
 - display size
 - screen resolution
 - input method
 - operating system
 - database capabilities
 - network connectivity
 - etc.

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The platform is the combination of hardware and software that enables the product to run in terms of both user interactions and internal operations.

The concept of a platform is by nature not strongly defined, but is shorthand to describe a number of important product features such as form factor, display size, screen resolution, input method, operating system, database capabilities, and network connectivity.

Platforms

- **Common platforms include**

- Desktop
- Website
- Web application
- Embedded System



Embedded systems are physical devices with integrated software systems

- Handheld device
- Kiosk
- Game console
- Set-top box
- Smart TV

Designing for Desktop Software



Decisions about technical platforms are most effectively made in conjunction with interaction design efforts



Desktop application will be one of the following categories

- Sovereign
- Transient
- Daemonic

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Desktop applications categories:

Sovereign

Monopolises users attention for long periods of time. They stay onscreen and interact with the user for long uninterrupted stretches of time. When most users think of desktop computer software, it will be a sovereign application that they imagine.

It should be optimised for full screen use

The visual style should not be distracting

If it is a document-centric application, the document view should fill as much of the application as possible.

Transient

A product that comes and goes, presenting a single function with a constrained set of accompanying controls.

It only appears when needed, and after performing its job, it quickly leaves

It should be simple, clear, and to the point

It should remember user choices, and use them rather than asking every time.

Daemonic

A program that does not normally interact with the user

Designing for the Web

- **Websites are either**
 - Informational
 - Transactional
- **Most will be a combination**



Modern web technologies make the line between desktop and web software extremely blurred



You can now use the same principles for designing web applications as desktop applications

Designing for Embedded Systems

- When designing for embedded systems, keep the following in mind



- Do not think of your product as a computer
- Integrate your hardware and software design
- Context should drive the design
- Avoid using modes unnecessarily
- Limit the scope
- Balance navigation with display density
- Minimise input complexity
- Design for the specific platform

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Do not think of your product as a computer

Users do not approach embedded devices with the same expectations and mindset as when approaching a computer. Design according to their expectations and needs for the kind of device that it is, as well as for the strengths and weaknesses.

Integrate your hardware and software design

Consider the iPod clickwheel. It is the result of designing the operating system of the iPod in conjunction with the hardware.

Context should drive the design

e.g. A car's dashboard computer can not safely have controls that change their meaning as the driver would be distracted whilst trying to use the software.

Designing for Embedded Systems

- When designing for embedded systems, keep the following in mind



- Do not think of your product as a computer
- Integrate your hardware and software design
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- Minimise input complexity
- Design for the specific platform

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Avoid using modes unnecessarily

Users are easily confused and stumped by modal behaviour because it is difficult to convey what mode a product is in with the limitations of embedded systems. They usually have a limit on screen real estate, and a limited number of input options, it not only becomes more difficult for the user to know how to change modes, but also to know what mode they are in, the more modes exist within the design

Limit the scope

Embedded systems are used in specific contexts, and usually for specific purposes. Avoid the temptation to turn those systems into general purpose computers.

Balance navigation with display density

Due to screen size limitations you can not usually fit much into the navigation. Determine what is the most important information to convey and build a hierarchy, making the most important features most prominent. Only after the most important information has been shown, look at what ancillary information can still fit on to the screen. Avoid jumping between different sets of information as the flashing/blinking is liable to frustrate your user.

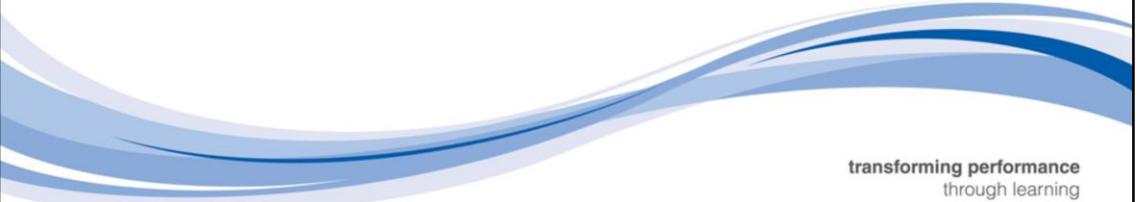
Minimise input complexity

Most embedded systems have a simplified input system. They are usually more cumbersome than a full sized keyboard and mouse.

Design for the specific platform



Metaphors, Idioms, and Affordances



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Interface Paradigms

- **There are three dominant paradigms in conceptual and visual design of user interfaces**
 - Implementation-centric
 - Metaphoric
 - idiomatic

Implementation-Centric Interfaces

- **Interfaces expressed in terms of their construction**
- **In order to use them successfully a user must understand how the software works internally**
- **An implementation-centric interface is designed according to implementation models rather than any user needs**



These are awful and should be avoided

Interface Metaphors

- Many designers want everything to reflect a real world object where possible
- A calendar is designed to look like a physical calendar
- A notepad application is designed to look as much like a physical notepad as possible
- Despite its popularity it is a limiting approach with many problems

Interface Metaphors

- **Metaphors do not scale well**
- **If another application is using the same metaphor for a different purpose your user will be confused by the differences between yours and the other application**
- **Digital products do not need to be limited to the constraints of physical products**
- **Users may not recognise the metaphor, rendering it an expensive waste of time and resource to design**

Interface Metaphors



Split into groups and identify interface metaphors that were chosen to be intuitive no longer make any sense to a user not already familiar with the metaphor.

e.g. Save commands being represented by a floppy disk



In your groups identify interface metaphors that have stood the test of time, and determine why they still work.

Idiomatic Interfaces

- **Designs built on the way we learn and use idioms**
- **They solve the problems of the previous two interface types by focusing on the learning of simple, non-metaphorical visual and behavioural idioms to accomplish goals and tasks**
- **A good idiom is easy to learn, and only needs to be learned once**



GUIs are primarily Idiomatic, even when they retain metaphorical design elements

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Idioms are figures of speech

Affordances



The perceived properties of a thing, primarily those fundamental properties that determine just how the thing could possibly be used

If something looks like it should do something, it had better well do that thing

- **It most certainly should not be doing something else**

If a design includes an element that looks like an indicator light, it had better be used as an indicator, and it should behave in the way it looks like it should behave

Affordances



- Buttons should look like buttons
- If it looks like a handle, we can grab it and pull it
- You are signing a social contract with your users when you design something that looks like it can be grabbed, pulled, or pushed
- Make sure that your program delivers on the expectations it sets and allow the user to pull or push according to your visual cues

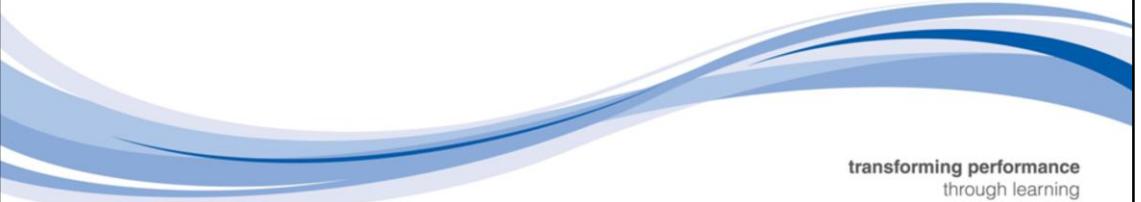
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Buttons should look like buttons

Our brains automatically process them as things that can be pushed



The Building Blocks of Visual Design



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Shape

- Is it round, square, or other?
- An area defined in such a way that it stands out from the space next to or around it due to a defined or implied boundary
- Shape alone is a poor method of distinguishing one object from another

Size

- **Is it big or small?**
- **Larger items draw our attention more, especially if they are larger than similar items around them**
- **A user will subconsciously sequence objects according to their size**

Value

- **How light or Dark is it?**
- **People perceive contrasts in value quickly and easily**
- **Value can be an ordered variable, as is most commonly seen on maps**

Hue

- Is it red, yellow, or orange?
- Best used judiciously as colour meanings are affected by social convention
- A significant number of users are colour-blind, so no information should ever be conveyed purely by colour
- Too much colour makes it difficult to distinguish any particular feature, and can lead to a Vegas effect where colour is so ubiquitous that the user no longer notices it

Orientation

- Is it pointing up, down, or sideways?
- Useful for conveying directional information
- Due to the difficulty in perceiving the orientation of many shapes, it is best used as a secondary communication vector

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e.g. Stock is falling; show a downward pointing arrow that is also red.

Texture

- **Is it rough or smooth? Regular or uneven?**
- **Screen elements do not actually have a texture, but have the appearance of it**
- **Ridges or bumps on a screen element convey the idea that it can be dragged**
- **Bevels on a button make it look more clickable**

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<http://v4.jasonsantamaria.com/articles/what-the-world-needs/>

Texture Examples

Position

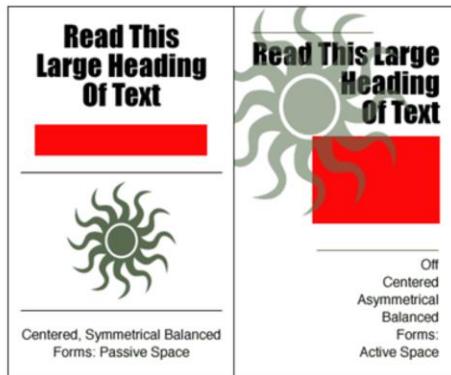
- Where is it in relation to the other elements?
- Is a hierarchical display of information
- Can also be used to indicate a spatial relationship

Space

White space is to be regarded as an active element, not a passive background.

—Jan Tschichold

- Without whitespace there is no form – one provides the contrast to see the other



Passive and Active Space

- **Space is created between and around positive elements**
 - It can exist between shapes, images, lines and dots
- **Whenever there is no positive element there is whitespace**
 - *Space can be a by product of layout*
 - *Or it can be consciously planned, becoming part of the design*
- **Leftover space is passive, Planned space is active**

Spaces between the forms, or the negative shapes, play just as great a role as the positives and they enable you to check the accuracy of your drawing. The positives make the negatives and negatives make the positives.

—Stan Smith

Passive Space

- **Passive space is usually used for symmetry it forces unused space to the periphery**
 - For example many websites actively centre the main content on screens



The shape above and this text are centered on the page. The resulting space is symmetrical, forced to the edges, and passive



Here the shape has been shifted into the empty whitespace. Asymmetry is created and the resulting space made more active and interesting as a result

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Passive space isn't integral to our perception of design elements as it doesn't affect the positive form. Passive space isn't enhancing your design elements. It isn't necessarily detracting from them either. It's simply there and usually it hasn't been consciously planned.

Being passive in your use of space forces space to the perimeter. Think of any fixed and centred website. Assuming you're viewing the site in a browser open wider than the fixed width you see space that's been forced to the edges.

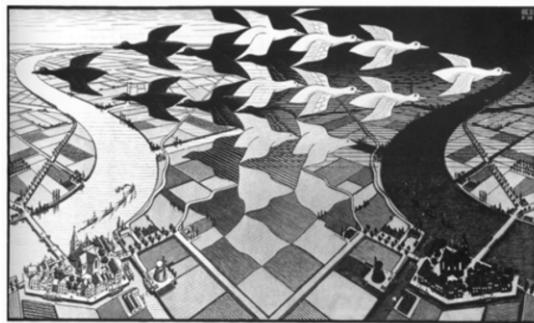
I'm sure you've built a similar site and know you didn't consciously think of the space other than perhaps to make it equal on each side. Your thoughts were on centring everything other than that passive space.

Passive space is usually symmetrical. Because of its symmetry it's predictable and suggests order, balance, peacefulness, and stability. Each of the previous qualities may be exactly what you want at times. However due to its predictable orderly nature it tends not to be noticed and becomes background only.

Order, balance, peacefulness and stability are all appropriate at times. Because of the title of this post and because more of the content in it is about active space you may be led to believe that active space is good and passive space is bad. That isn't so.

Active Space

- **Active space is integral to our perception of design elements**
 - The space influences the form
 - It enhances your design elements by affecting their shape and position on the page
- **Active space is space that has been consciously planned**
 - It has an active role in the design
 - It is not simply there



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Figure – Day & Night, By M.C. Escher

Seeing emptiness not as emptiness, but as a shape to be arranged leads to better designs. Seeing space as shape leads to space becoming part of your visual grammar instead of merely background. It becomes something you can use to communicate.

Using Space

- **Visual design is the arrangement of shapes**
 - Shapes that are both positive (form) and negative (space)
 - Learning to activate space leads to the creation of shapes of space
 - That are equally interesting and important to the shapes of form on the page

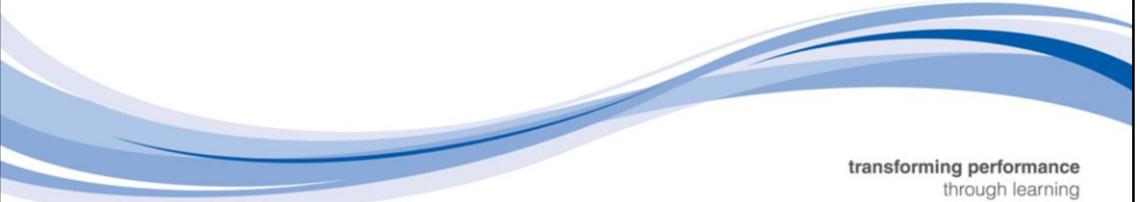


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<http://www.vanseodesign.com/web-design/active-space-examples/>



The Principles of Visual Design



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The Power of Passive Visual Processing



- **The human brain is excellent at pattern-processing**
- **We passively process an incredible amount of visual information**
- **To effectively communicate the behavior and functionality of an application to the user the visual design must take advantage of this innate visual processing capability**

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To calculate the trajectory of a ball that has been thrown to you in order for you to catch it requires a great deal of computing power, and we are able to do it in the blink of an eye, and rapidly enough that we can adjust for other variables such as the wind affecting the trajectory.

Visual Interfaces



- **A visual interface should:**

- Use visual properties to group elements and create a clear hierarchy
- Provide visual structure and flow at each level of organisation
- Use cohesive, consistent, and contextually appropriate imagery
- Integrate style and function comprehensively and purposefully
- Avoid visual noise and clutter

Grouping Elements and Providing Clear Hierarchy

- It is a good idea to distinguish between logical sets of controls or data by grouping them with a visual property
- By consistently applying a visual property throughout an interface you create patterns that your users will learn to recognise



A visual interface is based on visual patterns

Creating Visual Hierarchy



Based on the Cinema goer scenario, determine which controls and data users need to understand instantly, which are secondary, and which are needed only by exception

Next use hue, saturation, value, size, and position to distinguish levels of hierarchy



You may need to add to your scenario to include more data sources or controls for the purposes of this exercise

Establishing Relationships



On the Cinema website design, spatially group elements that are used together, and group elements that are not used together, but have similar functions visually



You may need to add to your scenario to include more data sources or controls for the purposes of this exercise

The Squint Test



A good way to help ensure that a visual interface design employs hierarchy and relationships effectively is to use the “squint test”



Close one eye and squint at the screen with the other eye in order to see which elements pop out and which are fuzzy.

Which items seem to group together?



Changing your perspective can often uncover previously undetected issues in layout and composition

Alignment

- **Grouped elements should be aligned both horizontally and vertically**
- **Every element should be aligned with as many other elements as possible**
- **The decision not to align two elements or groups of elements should be made judiciously and always achieve a specific differentiating effect**

Alignment

- Designers should take particular care to:
 - Align labels
 - Align within a set of controls
 - Align across control groups and panes



Spot the Difference

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Designers should take particular care to:

- Align labels

Labels for controls stacked vertically should be aligned with each other.
Unless labels differ widely in length left-justification is easier for users to scan than right-justification

- Align within a set of controls

A related group of check boxes, radio buttons, or text fields should be aligned according to a regular grid

- Align across control groups and panes

Groups of controls and other screen elements should all follow the same grid wherever possible

The Grid



- **The Grid is one of the most powerful tools available to the designer**
- **It provides a uniform and consistent structure to layout**
- **Typically the grid divides the screen into several large horizontal and vertical regions**
- **A well designed grid will employ an atomic grid unit**

The Grid



- The atomic grid unit is of an arbitrary size, chosen by the designer as the smallest size between objects; e.g. 4 pixels
- All spacing between elements a groups will be in multiples of the atomic grid unit. i.e. in the above example all spaces will be multiples of 4 pixels in size



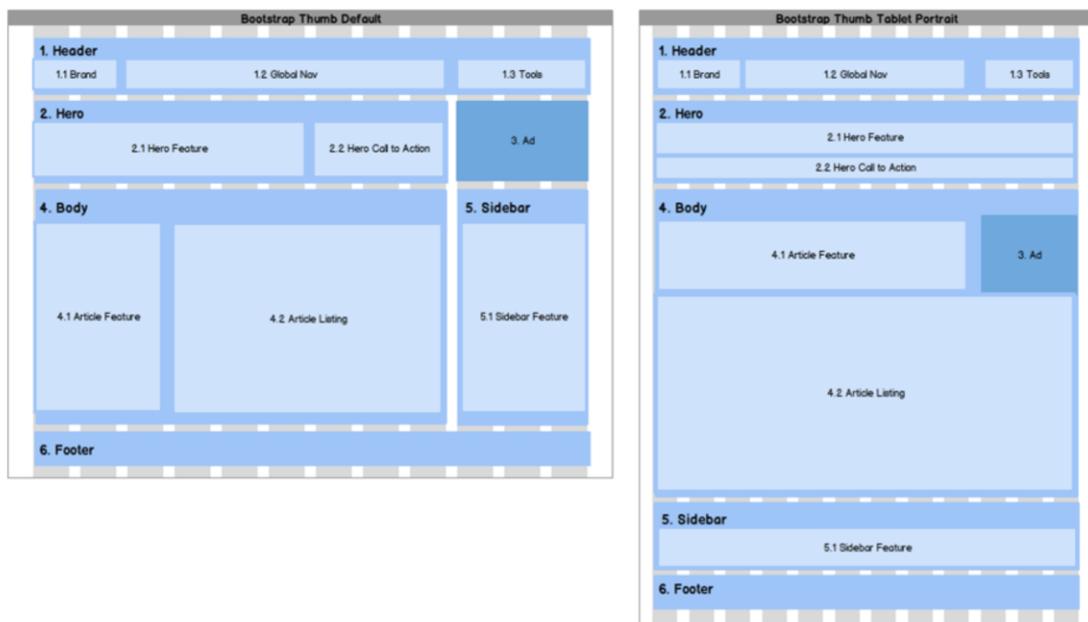
Draw a grid for the hotel website and align the elements as appropriate

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Atomic grid unit is the smallest space between columns.

Grid unit refers to the columns, which should be the same size in each axis

Example Wireframes on a Grid



Benefits of the Grid



- **Usability**
- **Aesthetic appeal**
- **Efficiency**

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Usability

Users are able to learn quickly where to find key interface elements . If the screen header is always in precisely the same location the user does not have to think or scan to find it

Consistent spacing and positioning support people's innate visual-processing mechanisms; a well-designed grid greatly improves the readability of the screen

Aesthetic appeal

Efficiency

Standardising the layout reduces the amount of work required to produce high quality interfaces

Review

- **The surface phase takes the UCD research we have worked on**
 - It aims to design content for emotion
 - We aim to please the mental and cognitive models of the user
 - To give a great product