Postgraduate Certificate Web Design and Development 29 January 2011

WDD3.3
Usability & Evaluation

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Recap: *What you've learned in the last session*

- Translating user research and business requirements into **conceptual solutions**
- Prototyping at the right level of fidelity – **storyboards, sketches** and **wireframes**
- **Classifying** and **structuring information** in a way **meaningful to users**
- Creating navigation systems – **showing users where they are, where they can go, where they have been**
- Creating content that is **relevant, succinct, scannable, legible and credible**
- Homepages that **explain proposition, create clear entrypoints & CTA's and give examples of content**
- **Interaction design**: task flow, action/reaction, behaviour, state and error avoidance

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2.3.1 Psychological basis of usability

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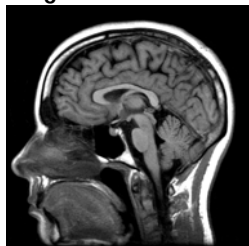## We need to design for limited cognitive hardware

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A model of human information processing (Wickens, 1992)
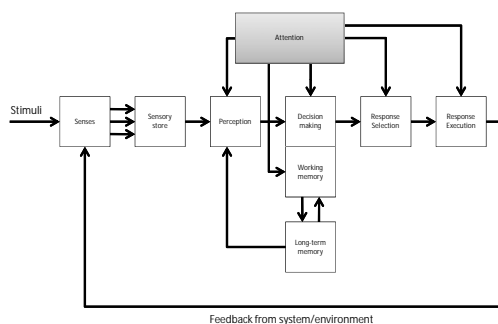
Feedback from system/environment

Sensation & Perception

Sensation: Stimuli impinge on the senses and give rise to neural events.

- **Sensory memory** holds stimulus for a very brief period of time.

Perception: Giving meaning to the event that produced the sensation.

- **Automatic, rapid and requires little attention** unlike cognitive processes that start when perceived information is processed.
- **Bottom-up processing** is driven by incoming data/stimuli
- **Top-down processing** is driven by prior knowledge

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What is this?

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What does this say?

THE CAT

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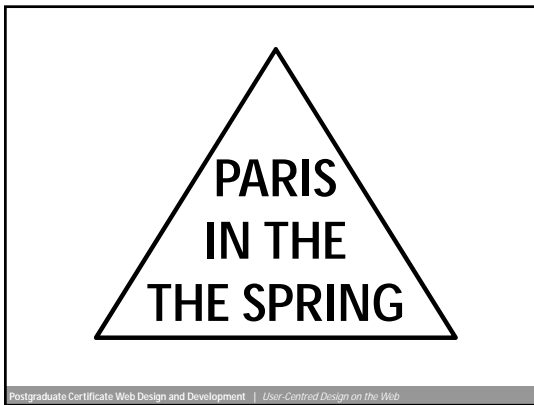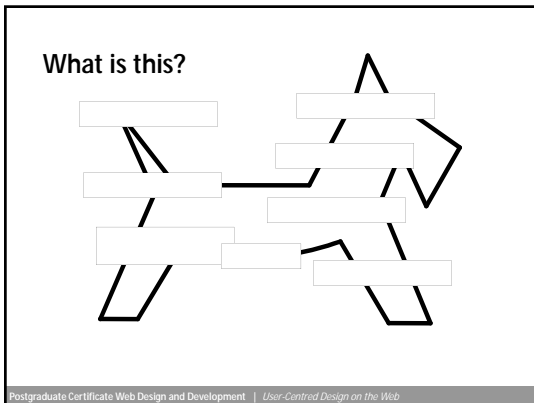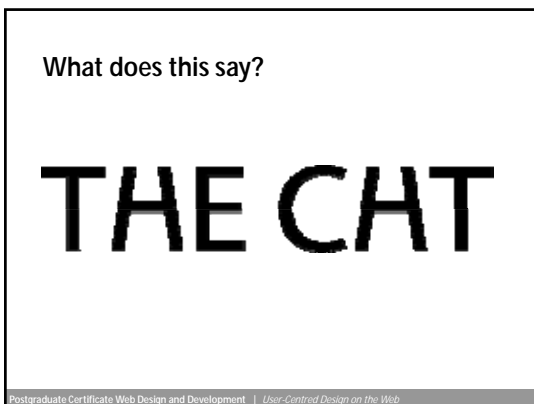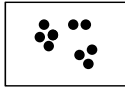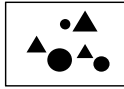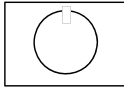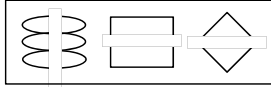
Gestalt principles

Proximity

Similarity

Closure

Continuity

Symmetry

It's important to be aware of these principles and to consider them in your design!

Design implications

- **Structure:** Help users understand what belongs together by chunking similar and separating different items
- **Consistency:** Help users apply previously acquired knowledge from LTM. (consistency within the UI and consistency with the world)
- **Visibility** and **affordance:** Show all required information and use controls that are self-explanatory.
- **Feedback:** Communicate the consequence of an action

Prominence
indicates importance

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Big things
are perceived more important
T H A N   S M A L L   O N E S

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Proximity-compatibility principle

Things that are near each other are presumed to be similar

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Things that are separated are presumed to be different

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Difference can also be indicated using visual contrast i.e. colour, size, style

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Headings summarise adjacent content
Painfully obvious isn't it?

But for it to work, headings must be instantly recognised as headings.

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Lack of distinction or visual clutter undermines their function

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Try to remember this:

K F J A S A N I B F O T N A S P U

Now this:

KFJ ASAN IBF OTNA SPU CKF

Now this:

JFK NASA FBI NATO UPS KFC

Memory

Short term (working) memory
- Size **7 ±2 chunks** (Miller, 1956), consists of:
- **An auditory component** [the phonological loop]
- **A visual component** [the visio-spatial sketchpad]
- Each has its own store & its own rehearsal mechanism

Long term memory
- Thought to be organised on the basis of **meaning and semantics**
- **Schemas:** Organised knowledge structure to reflect knowledge, experience, expectations. Unconscious routines for commonly performed actions
- **Activated schemas** stand ready to execute on cues from the environment

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Design implications

- **Visibility:** Minimise what users need to remember ("the knowledge in their head") and show all required information on the page ("the knowledge in the world")
- **Consistency:** use a language and imagery that conforms to user expectations and previously acquired knowledge; allowing users to connect existing knowledge with new one.
- **Simplicity:** avoid information overload.
- **Concrete things are easier to remember** than abstract ones.
- **Examples and mnemonic devices** help us remembering things: see Dyson website

Attention

Selective Attention
- Attention can be selective (e.g. listening to a particular instrument in an orchestra)

Divided Attention
- **Criteria:** Task difficulty, Task similarity & Practice
- Practice leads to processes becoming automatic
- Differentiate between **controlled and automatic processes**
- **Controlled:** Limited capacity, requires attention, flexible
- **Automatic:** No capacity limitation, require no attention, difficult to modify

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Check this: <u>Card trick</u>

Design implications

- We have **limited attentional resources** at our disposal. Use visibility, affordance, structure, feedback and consistency to help users shift attention between different tasks and aspects of the page and alert them of changes.
- **Simplicity:** Don't present too many things at once.
- **Tolerance:** Help users recover from slips of their attention and help avoid errors.

In Summary

The human information processing system can be seen as:
- **A general purpose pattern recogniser**
- **With limited information processing capacity**
- **Using heuristics** (rules of thumbs) to simplify the information processing load
- **Acting as a satisficer** rather than an optimiser

Reason (1990)

In Summary

- We make **predictions based on previous experience,** or, in other words, **we see what we expect to see.**
- We use Gestalt principles to interpret what we see, and therefore **it is easier for us to perceive a structured layout.**
- We have limited working memory, therefore **it's easier to recognise than recall** for us.
- We use **habits to help us reduce mental effort,** which means that on the web, we often do things in automatic mode rather than consciously paying attention.
- With our limited **attentional** resources we can only give real **attention to one thing at a time.**

In Summary

Design principles to apply:
- **Visibility** of information and controls
- **Affordance** and correct **mapping** of controls
- **Feedback** from the system
- **Structure** of the design
- **Consistency** with user expectations and the world
- **Simplicity** of the design
- **Tolerance** of the system to errors

(Norman 1988)