

# **COMP1650 – User Interface Design**



**Information Architecture**

**Dr. Fotis Spyridonis**

# By the end of this session you should be able to:

- Understand the background and context of information architecture
- Identify the basic principles and techniques underpinning information architecture
- Build the theoretical background necessary to implement information architecture in UID,

which support your first learning outcome “Understand the issues involved in developing and evaluating interfaces for interactive applications”

# Some important statistics...

- Why Information Architecture Matters to Your Business
- Search and findability accounts for 42% of usability problems
- Page design, content usability, task support, and annoying multimedia account for 58% of task failures (Loranger and Nielsen, 2006)

This is why Information Architecture is important!

# About information architecture (IA)

## Quote of the day



“...the world can be seen as only connections, nothing else...a piece of information is really defined only by what it's related to, and how it's related. There really is little else to **meaning**. The **structure** is everything.”

*Sir Tim Berners-Lee  
Weaving the Web*

# The architecture analogy...



# Some definitions...



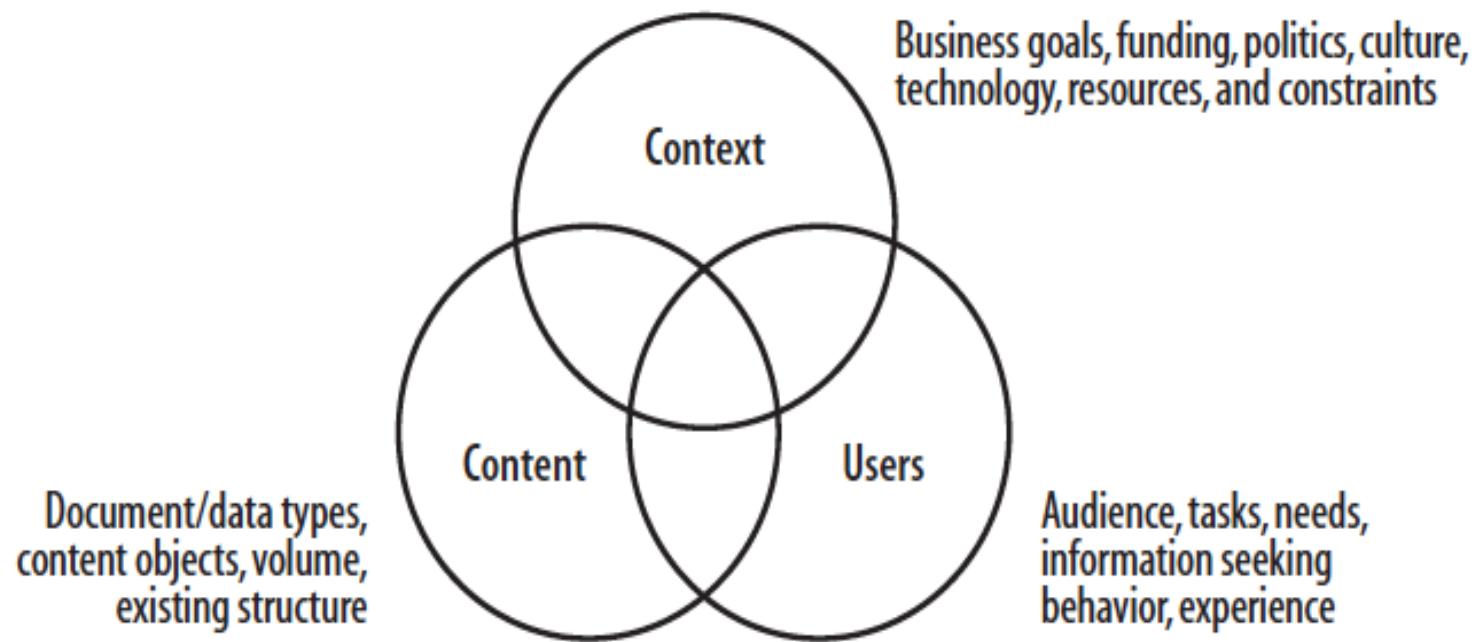
**Information architecture is:**

1. The structural design of shared **information environments**.
2. The combination of **organization**, **labeling**, **search**, and **navigation** systems.
3. The art and science of shaping information products and experiences to support **usability** and **findability**.
4. An emerging discipline and community of practice focused on bringing principles of design and architecture to the digital landscape.

# IA is everywhere!



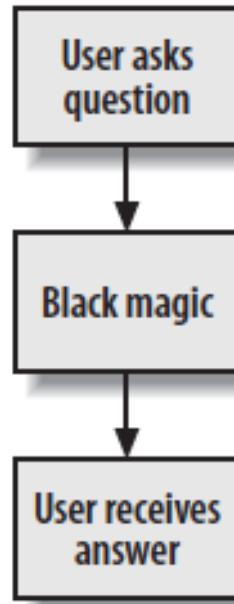
# The three circles of IA



# What do users need?

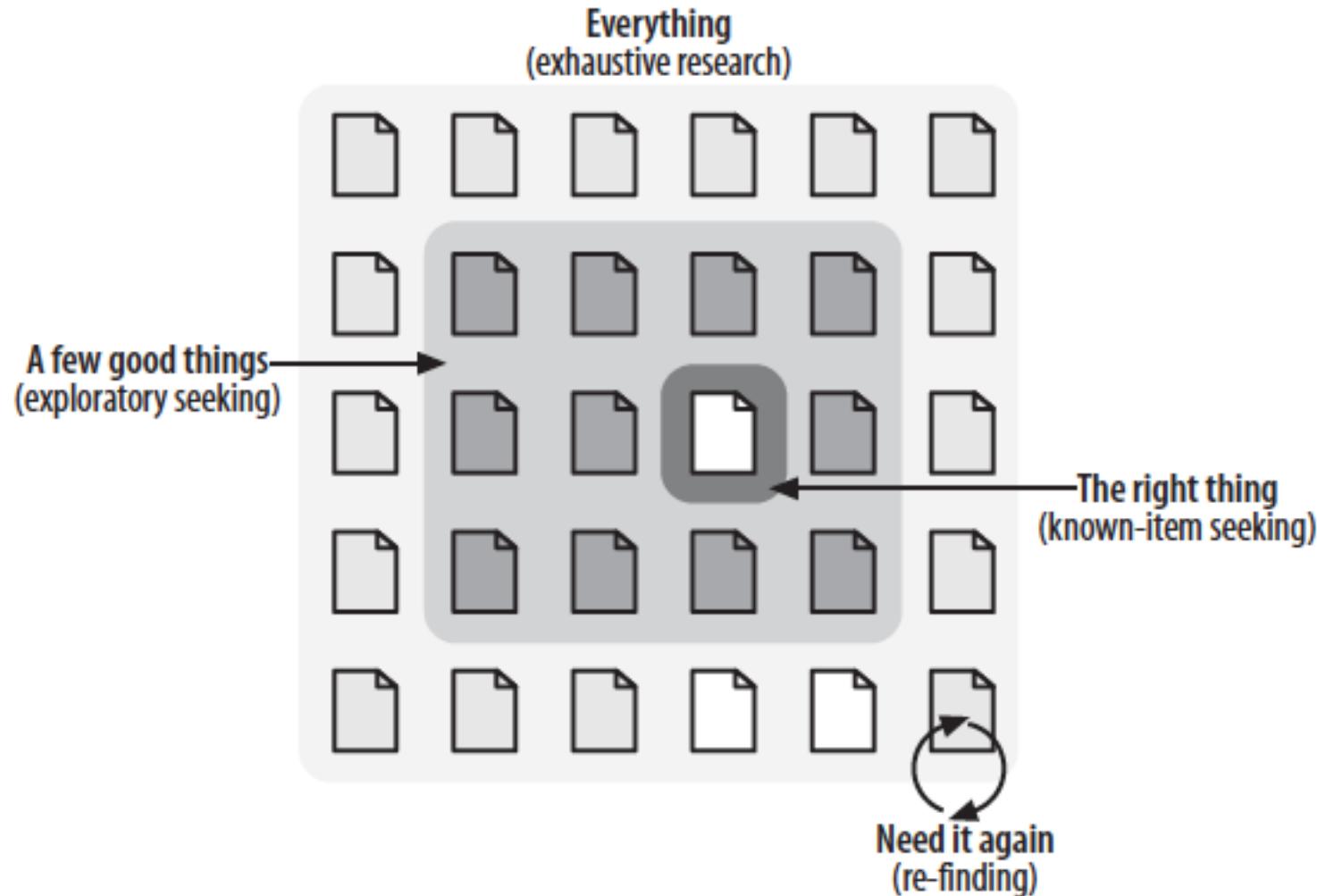
What do they look for?

# “too-simple” information model



1. User asks a question
2. Something happens (i.e., searching, browsing, chatting).
3. User receives the answer.
4. End

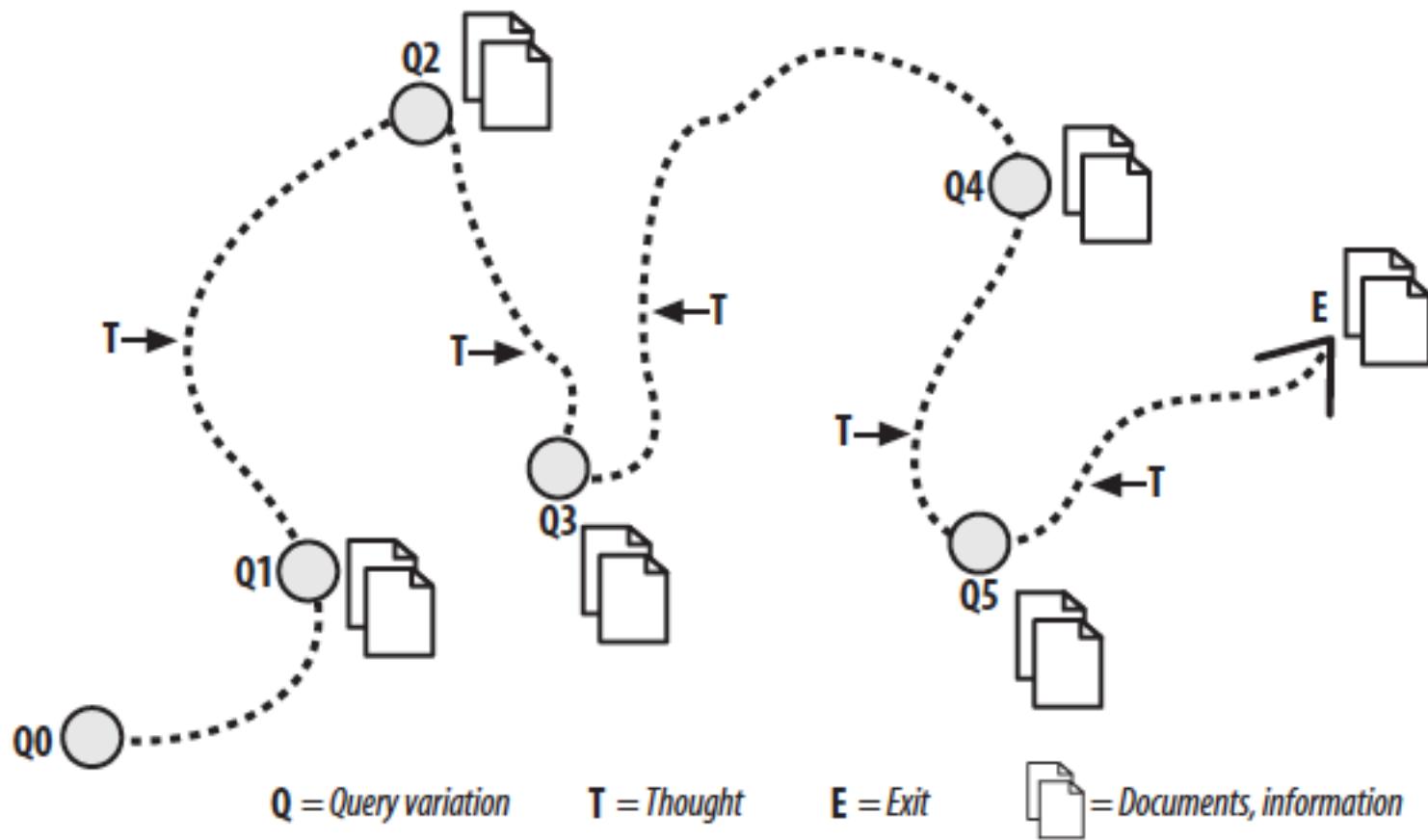
# Common information needs



# How do users search?

How do they seek information?

# The “Berry-picking” model



# Search-to-browse-to-search

YAHOO! UK & IRELAND

football

Search

Web

Images

Video

News

Local

Answers

Shopping

Celebrity

Less

---

Anytime

Past day

Past week

Past month

---

The Web

Only in UK

Only in Ireland

[BBC Sport - Football](#)  
[www.bbc.co.uk](http://www.bbc.co.uk)

Results   Fixtures   Tables



Terry to be offered new Chelsea deal  
Tue, 03 Mar 2015 13:36:15 GMT

Wigan chairman Whelan steps down  
Tue, 03 Mar 2015 12:13:33 GMT

Ex-Spurs midfielder Mackay dies  
Tue, 03 Mar 2015 11:51:01 GMT

[More from BBC Sport](#)

[Football News, Results, Fixtures and Live Football Scores](#)  
[www.football.co.uk](http://www.football.co.uk) Cached

Football.co.uk latest football news and live scores UK Premier league table, Championship all United and City England & Scottish division club football results with ...

[Football Games, Results, Scores, Transfers, News | Sky Sports](#)  
[www1.skysports.com/football](http://www1.skysports.com/football) Cached

Sky Sports Football - Live games, scores, latest football news, transfers, results, fixtures and team news from the Premier to the Champions League.

[BBC Sport - Football](#)  
[www.bbc.com/sport/0/football](http://www.bbc.com/sport/0/football) Cached

The latest BBC Football news plus live scores, fixtures, results, tables, video, audio, blogs and analysis for all major UK and international leagues.

# The “pearl-growing” approach

**Neomillennial user experience design strategies: Utilizing social networking media to support "always on" learning styles**

[PDF] from pbworks.com

DE Baird, M Fisher - Journal of educational technology systems, 2005 - Baywood

Raised in the "always on" world of interactive media, the Internet, and digital messaging technologies, today's student has different expectations and learning styles than previous generations. This net-centric generation values their ability to use the Web to create a self- ...

Cited by 258 Related articles All 7 versions Cite Save

[book] **Elements of User Experience, The: User-Centered Design for the Web and Beyond**

[PDF] from pearsoncmg.com

JJ Garrett - 2010 - books.google.com

From the moment it was published almost ten years ago, **Elements of User Experience** became a vital reference for web and interaction designers the world over, and has come to define the core principles of the practice. Now, in this updated, expanded, and full-color ...

Cited by 1047 Related articles All 12 versions Cite Save More

[HTML] **User experience and experience design**

[HTML] from free-knowledge.org

M Hassenzahl - ... of Human-Computer Interaction, 2nd Ed., 2013 - free-knowledge.org

Eric Reiss has been meddling with multimedia and web projects for longer than he cares to remember. Born in San Antonio, Texas, in 1954, Eric Reiss has held a wide range of eclectic jobs including ragtime piano player (in a St. Louis house of ill-repute), seni...

Cited by 71 Related articles All 3 versions Cite Save More

[book] **Smart Things: Ubiquitous Computing User Experience Design: Ubiquitous Computing**

**User Experience Design**

M Kuniavsky - 2010 - books.google.com

The world of smart shoes, appliances, and phones is already here, but the practice of **user experience (UX) design** for ubiquitous computing is still relatively new. **Design** companies like IDEO and frogdesign are regularly asked to **design** products that unify software ...

Cited by 107 Related articles All 6 versions Cite Save More

# Task (20 min)

You have been approached by a large supermarket in order to improve their **computerized touch-screen scales**. There have been some complaints that customers are spending a long time at the scales and are frustrated by how the categories are organized.

- Items
- OR visit <http://ows.io/os/0085u033>
- Try to organise the items on the left into meaningful to you **groups** e.g. vegetables, fruit, etc.
- Compare your groups to the groups that your peer sitting next to you has defined.

**How do I recognize information  
architecture when I see it?**

# Bottom-up information architecture

## Information architecture embedded within content

- ❑ supporting searching and browsing within content enables answers to users' questions to “rise” to surface

**Content structure, sequencing, and tagging help answer questions such as:**

- ❑ Where am I?
- ❑ What's here?
- ❑ Where can I go from here?



COOK

REVIEWS (3)

## YIELD:

Serves 1.

## INGREDIENTS

- + 4 ounces grapefruit juice
- + 2 ounces vodka
- + Cut lemon
- + Salt
- + 2 or 3 ice cubes

Logical structure of content

## PREPARATION

Rub the rim of an Old-fashioned glass or an 8-ounce wineglass with lemon, then spin in salt. Add the ice cubes, vodka and grapefruit juice and stir gently to mix.

# Top-down information architecture

## “Top-down” questions of users:

1. Where am I?
2. I know what I'm looking for; how do I search for it?
3. How do I get around this site?
4. What's available on this site?
5. How can I contact a human/what's their address?
6. What's happening there?

1

3

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4

## Think about your Personas...

# #Outcome: Celebrating LGBT lives

[Find out more](#)[Find a programme](#)



Greenwich Campus ranked as one of UK's 'most beautiful' in national poll

Monday 5 September

How Much Is Enough?  
Lord Skidelsky talks money, life and value

Wednesday 12 October  
Greenwich Campus



Greenwich leads project to combat hunger in some of the poorest parts of the world

Wednesday 28 September

**6**  
Excellence in employability: National award for Greenwich

Friday 9 September

Cornell University showing for Greenwich architecture professor

Yesterday

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- [Our campuses](#)

#### Useful links

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- [Privacy and cookies](#)

# **Information architecture is in:**

## **Organization systems**

- How we categorize information, e.g. by subject or chronology

## **Navigation systems**

- How we browse or move through information, e.g. clicking through a hierarchy

## **Search systems**

- How we search information, e.g. executing a search query against an index

## **Labeling systems**

- How we represent information, e.g. scientific terminology (“Acer”) or lay terminology (“maple”)



Study here Students

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Organisation systems

# #Outcome: Celebrating LGBT lives

Find out more



Find a programme



Navigation system

# **Organisation systems**

**“The beginning of all understanding is classification.”**

*- Hayden White*

## Organisation Systems

### Organisation Schemes

Exact schemes

Ambiguous schemes

### Organisation Structures

Hierarchical

Non-hierarchical

# Organisation schemes

Exact organization schemes divide information into well-defined and mutually exclusive sections, such as:

- Alphabetical scheme e.g. sorted by last name, product, etc.
- Chronological scheme e.g. sorted by date of release
- Geographical scheme e.g. sorted by location

Ambiguous organization schemes divide information into categories that defy exact definition, such as:

- Topic-based i.e. organising by subject or topic
- Task-based i.e. organising by processes, functions, or tasks
- Audience-based i.e. organising by specific audiences

Microsoft Research Home  
About Microsoft Research  
Research Areas  
**People**  
Worldwide Labs  
University Relations

News  
Publications  
Downloads  
Conferences and Events  
Lectures Online  
Related Web Sites  
Press Resources  
Careers  
Visiting Microsoft Research  
Contact Us

RSS

**People**

SORTED BY: LAST NAME, FIRST NAME

**Alphabetical**

a b c d e f g h i j k l m n o p q r s t u v w x y z

	<b>Martin Abadi</b> Primary Group: Speech Research Group	<b>Kannan Achan</b>
	<b>Alex Acero</b> Primary Group: Program Analysis	 <b>Eugene Agichtein</b> Primary Group: Text Mining Search and Navigation Research
	<b>Stephen Adams</b> Primary Group: Networking Research Group	
	<b>Sanjay Agrawal</b> Primary Group: Data Management, Exploration and Mining (DMX)	 <b>Takako Aikawa</b> Primary Group: Natural Language Processing
	<b>Mark Aiken</b> Primary Group: Operating Systems	



Sergey Dolzhenko/European Pressphoto Agency

Ukraine, one of the largest countries in Europe, is a unitary semi-presidential republic, having achieved its independence with the dissolution of the Soviet Union in 1991.

Public protests demanding closer ties with the European Union and the resignation of President [Viktor Yanukovych](#) began in late 2013, leading to widespread civil unrest and, ultimately, revolution in 2014. Russia, prompted by counter-revolutionary sentiment in the Crimean Peninsula, staged a military intervention and subsequently annexed the region in a move largely condemned by the international community. Fighting between government forces and pro-Russian separatists has continued despite domestic and international efforts to de-escalate the crisis.

**Chronological**

Learn more about Ukraine. Scroll below to view our archive of articles and chronology of latest news.

**CHRONOLOGY OF COVERAGE**

MAR. 9, 2015

European Council Pres Donald Tusk is set to meet with Pres Obama to discuss crisis in Ukraine and how to handle Russia. [MORE](#)

MAR. 5, 2015

Explosion at coal mine in Donetsk, Ukraine, leaves 47 miners trapped underground with many feared dead. [MORE](#)

MAR. 1, 2015

Memo From Europe; Germany, often uncomfortable with leadership, is at center of crises over Ukraine and Greece; country has so far failed in effort to revive Minsk cease-fire deal with Russia over Ukraine and

GDP Per Capita: \$7,400  
Currency: hryvnia (UAH)  
Website: Rada.Gov.ua

Related Links: [Russia](#) | [European Union](#)

**MULTIMEDIA****Ukraine Crisis in Maps**

The latest updates to the current visual survey of the continuing dispute, with maps and satellite imagery showing rebel and military movement.

**UKRAINE NAVIGATOR**

A list of resources about Ukraine as selected by researchers and editors of The New York Times.

- [C.I.A. World Factbook country profile](#)
- [State Department — history and overview](#)

**GENERAL RESOURCES**

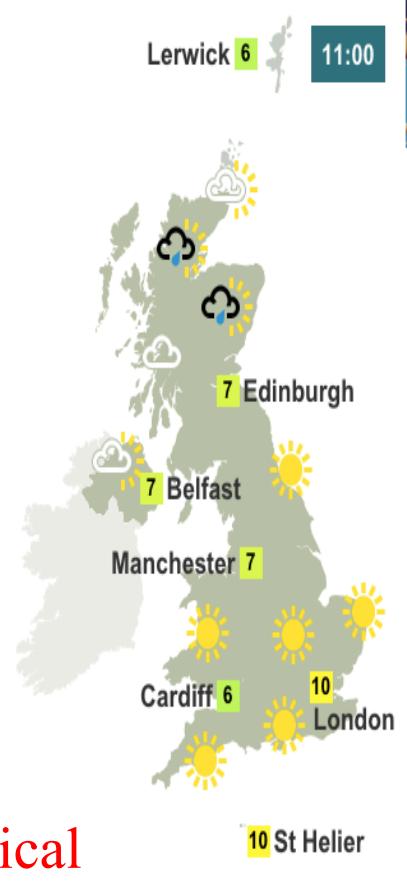
- BUSINESS  
• [International Finance Corporation](#)
- ECONOMY  
• [Global Economic Prospects](#)

**Some examples...****UK Today**

Fine and generally dry, with plenty of sunshine. Cold tonight.

Outbreaks of rain and strong winds across Scotland will soon ease away. A fine and sunny day will follow for much of the UK, with only limited amounts of cloud, and light winds.

Flood warnings have been issued

**More UK Weather****Monthly Outlook****Coast & Sea****Winter Sports****Country Guides****Geographical**

**Laundry**

- Washing machines
- Washer dryers
- Tumble dryers
- Integrated laundry
- Laundry accessories
- Laundry buying guide

**Dishwashers**

- Dishwashers
- Integrated dishwashers
- Dishwasher buying guide

**Refrigeration**

- Fridge freezers
- American style fridge freezers
- Fridges
- Upright freezers
- Chest freezers
- Wine cooling & mini refrigeration
- Integrated refrigeration

**Cooking**

- Range cookers
- Cookers
- Hoods & Splashbacks
- Microwaves
- Built-in cooking
- Cooking buying guide
- Range cooker buying guide

**Built-in Appliances**

- Single ovens
- Double ovens
- Built-under ovens
- Electric hobs
- Hoods
- Splashbacks
- Integrated microwaves
- Integrated laundry
- Integrated refrigeration
- Integrated dishwashers

**Cooking Accessories**

- Cookware
- Bakeware
- Utensils & gadgets
- Kitchen accessories
- Storage

**Brand shops**

- AEG
- Bosch
- Grundig
- Hotpoint
- Indesit
- Neff
- Rangemaster
- Samsung
- Siemens

**Services**

- Expert installation
- Recycle old appliances

# Topic-based

# Task-based

SHOP & SELL  
IN SUPPORT  
OF COMIC RELIEF

[LEARN MORE](#)

**RED  
NOSE  
DAY**



THE OFFICIAL  
RED NOSE DAY  
SPARKLE BADGE


[Popular Deals](#)

[Laptops & Ultrabooks](#)

[Desktops and All-in Ones](#)

[Tablets](#)

[Now Accepting PayPal](#)

[No.1 Monitors Worldwide](#)

# Audience-based

# Combination of schemes...



## Organisation Systems

### Organisation Schemes

Exact schemes

Ambiguous schemes

### Organisation Structures

Hierarchical

Non-hierarchical

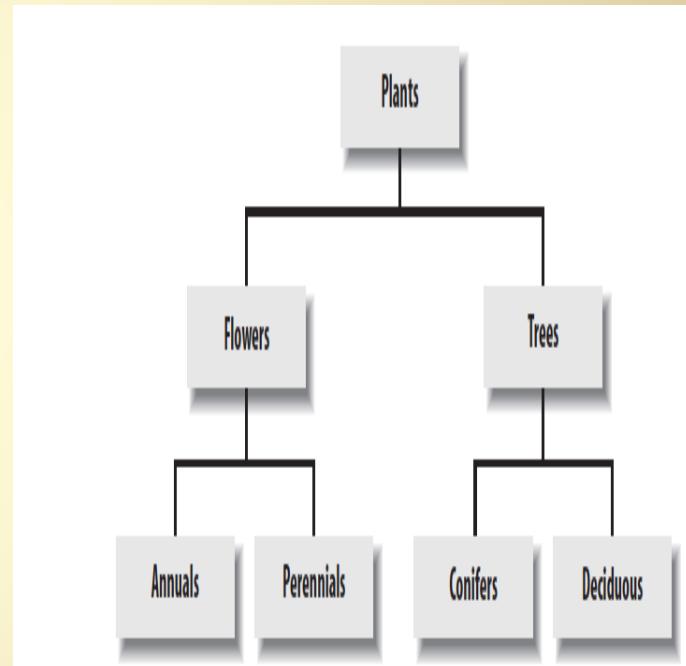
# Organisation structures

## 1. Hierarchical Structure

- See figure

## 2. Non-hierarchical Structure

- Hyperlinks
  - links between different information chunks
- Social tagging
  - users in content creation and classification



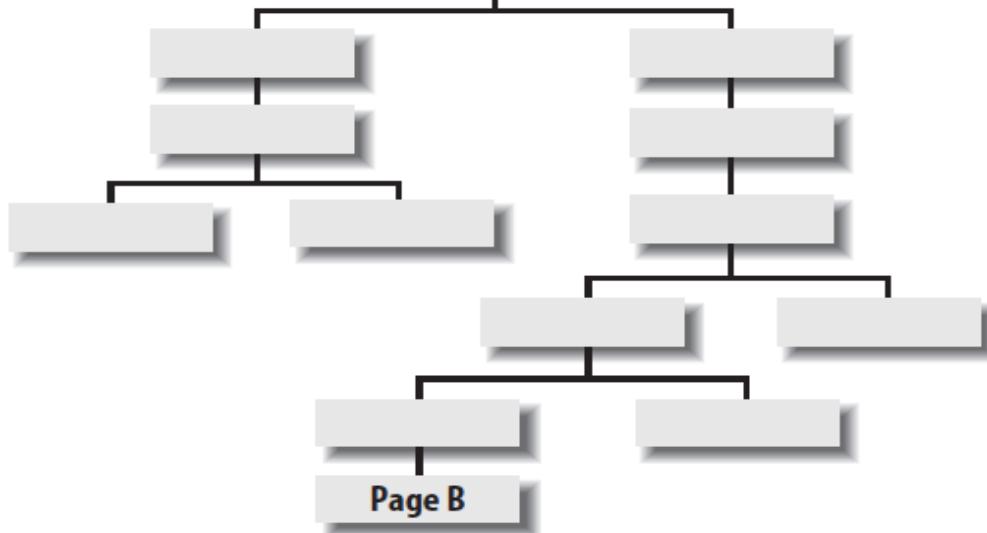
Adapted from Morville and Rosenfeld, 2007

# Breadth vs. depth

**narrow and deep**

*(6 clicks from A to B)*

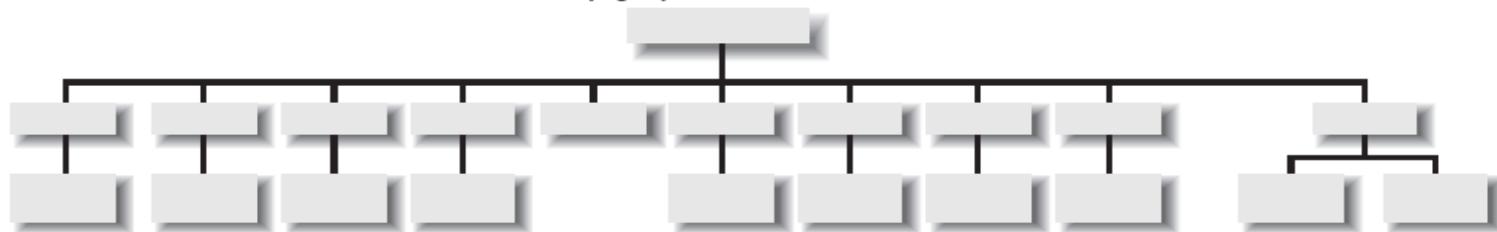
Page A



Which do you think  
is better and why?

**broad and shallow**

*(10 main page options for 10 content items)*



# Navigation Systems

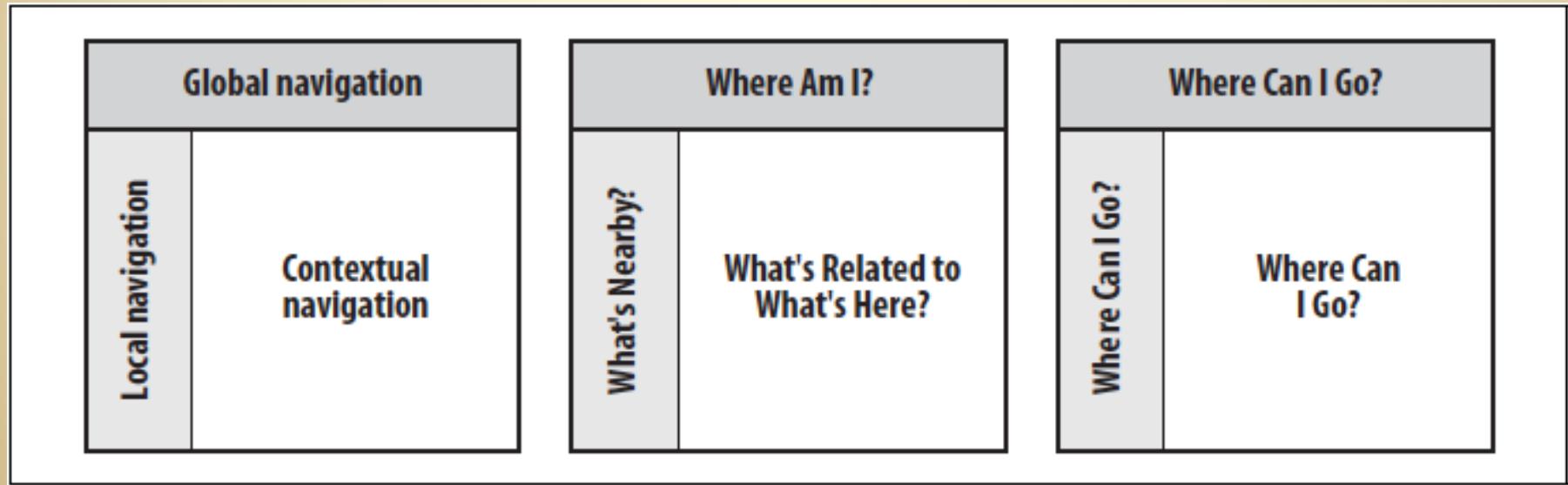
“Just wait, Gretel, until the moon rises, and then we shall see the crumbs of bread which I have strewn about; they will show us our way home again.”

—*Hansel and Gretel*

# Types of navigation systems

## Embedded navigation system

- integrated within your main UI pages or screens
- wrapped around and infused within the content of the design



# Global

The screenshot shows the Amazon.co.uk homepage with a sidebar menu. The menu includes links such as Amazon Instant Video, Digital Music, Appstore for Android, Amazon Cloud Drive, Kindle E-readers & Books, Fire Tablets, Amazon Fire TV, Fire Phone, Books & Audible, Movies, TV, Music & Games, Electronics & Computers, Home, Garden, Pets & DIY, Toys, Children & Baby, Clothes, Shoes & Jewellery, Sports & Outdoors, Beauty, Health & Grocery, and Car & Motorbike.

# Local

# Contextual

## Research that's outstanding

Our research on tsetse fly was named by Universities UK as one of the eight most important discoveries made in a UK university over the past 60 years.

## Research that's life saving

We are developing stents (tiny artificial tubes for keeping open damaged arteries) that can deliver drugs more effectively into the bloodstream.

A collaboration between the university and a UK engineering company has produced a bomb disposal robot that's lighter and easier to carry into the field.

## Research that's inspiring

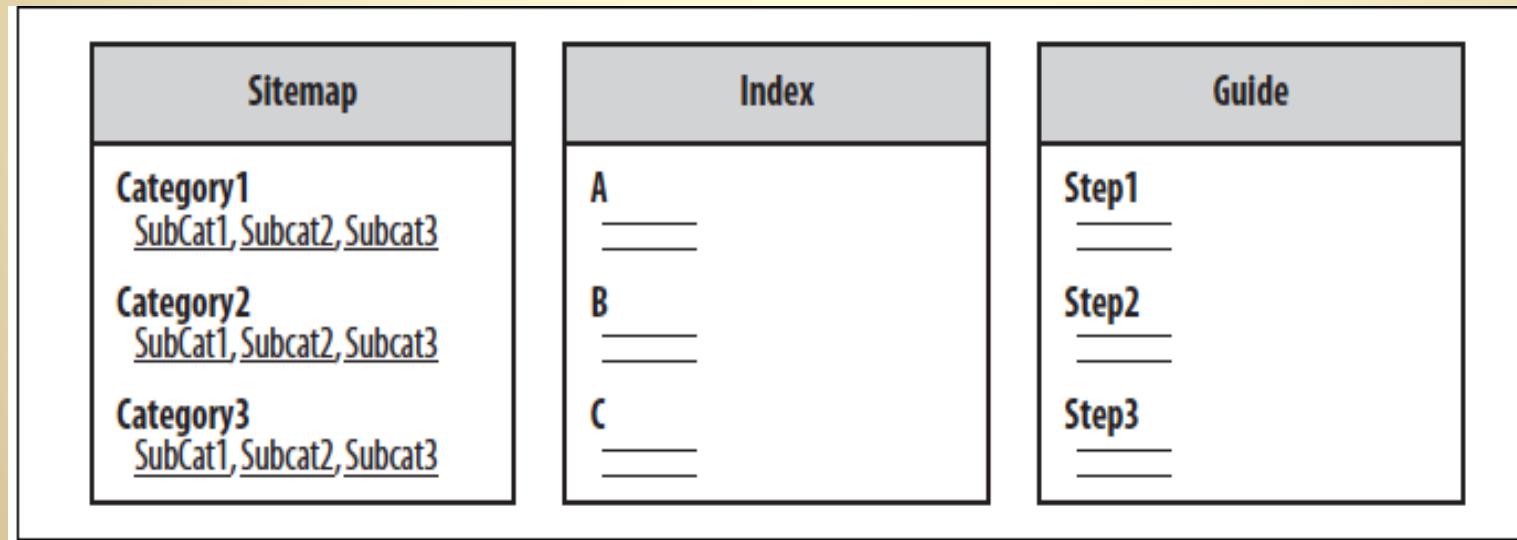
The university's Natural Resources Institute works across the world to reduce poverty and improve people's lives. Its research helps meet challenges such as pests and diseases and brings new technology and expertise to farmers in developing countries.

The screenshot shows a mobile view of The New York Times website. The sidebar menu includes Home Page, World, U.S., Politics, New York, Business (which is highlighted), Opinion, Technology, Science, Health, Sports, Arts, and Fashion & Style. To the right of the sidebar, there is a main content area featuring a banner for "InSIGHTFUL REPORTING WHEREVER YOU ARE" and a "GET IT NOW" button.

# Types of navigation systems

## Supplemental navigation system

- ❑ exists outside the content-bearing UI
- ❑ provides different ways of accessing the same information.



# A supplemental navigation system can also be...

- Wizards and Configurators
  - help to configure products or navigate **complex decision trees**
  - ‘jump back and forth between steps’
- Search
  - searching system part of supplemental navigation
  - enables a level of specificity

# Site Map | Intel.com

## Products

[Products with Intel Inside®](#)

[Tablets](#)

[2 in 1](#)

[All-in-One](#)

[Ultrabook™](#)

[Desktops](#)

[Mini PC](#)

[Laptops](#)

[Smartphones](#)

[Internet of Things](#)

[Product Performance](#)

[Data Center Performance](#)

[Data Center Optimization](#)

[High Performance Computing](#)

[Internet of Things](#)

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[Education](#)

[Casual Gamers](#)

[Extreme Gamers](#)

[Content Creators](#)

[Education](#)

[Maker](#)

[Intel® Edison](#)

[Intel® Galileo](#)

# Sitemap

# Site index

## Usable Web

786 links about web usability

Indexes: [Topics](#) | [Destinations](#)

## Site Index

Alphabetical index of topics, destinations and authors.

[A](#) | [B](#) | [C](#) | [D](#) | [E](#) | [F](#) | [G](#) | [H](#) | [I](#) | [J](#) | [K](#) | [L](#) | [M](#) | [N](#) | [O](#) | [P](#) | [Q](#) | [R](#) | [S](#) | [T](#) | [U](#) | [V](#) | [W](#) | [X](#) | [Y](#) | [Z](#)

A

- [A List Apart](#) (3)
- [About.com](#) (3)
- [Accessibility](#) (19)
- [ACIA](#) (15)
- [ACM](#) (14)
- [Advertising](#) (4)
- [ahref.com](#) (2)
- [Alertbox](#) (101)
- [All Things Web](#) (11)
- [Allen, Cliff](#) (1)
- [Analysis, Log](#) (4)
- [Analysis, User and Task](#) (7)

I

- [IBM](#) (9)
- [InformationWeek](#) (7)
- [InfoWorld](#) (12)
- [Inspection Methods](#) (6)
- [Instone, Keith](#) (5)
- [Intercultural](#) (6)
- [Interfaces, User](#) (8)
- [International, Human Factors](#) (4)
- [Internet World](#) (5)
- [Internetworking](#) (8)
- [Interviews](#) (15)
- [Intranet](#) (11)

S

- [SAP Design Guild](#) (10)
- [Schaffer, Eric](#) (1)
- [Scheinker, Matte](#) (2)
- [Search Tools](#) (3)
- [Searching](#) (15)
- [Seebach, Peter](#) (2)
- [Sellen, Abigail](#) (1)
- [Semen, Timothy](#) (1)
- [Sheets, Style](#) (5)
- [Shiple, John](#) (3)
- [Shirky, Clay](#) (1)
- [Shukla, Ujal](#) (2)

MINI ONE 5-DOOR HATCH 1.2 [CHANGE MODEL](#)

[SUMMARY](#) £ 14,500 ⓘ

[TOOLS >](#) [⟳](#) [⟲](#)

EXTERIOR INTERIOR PACKS EQUIPMENT

SOLID PEPPER WHITE METALLIC

£0 £0 £0 £750 £475 £475 £475 £475 £475 £475 £475 £475 £1,270

WHEELS

# Configurator

# **Documenting information architecture with Wireframes**

Users  
(Personas)

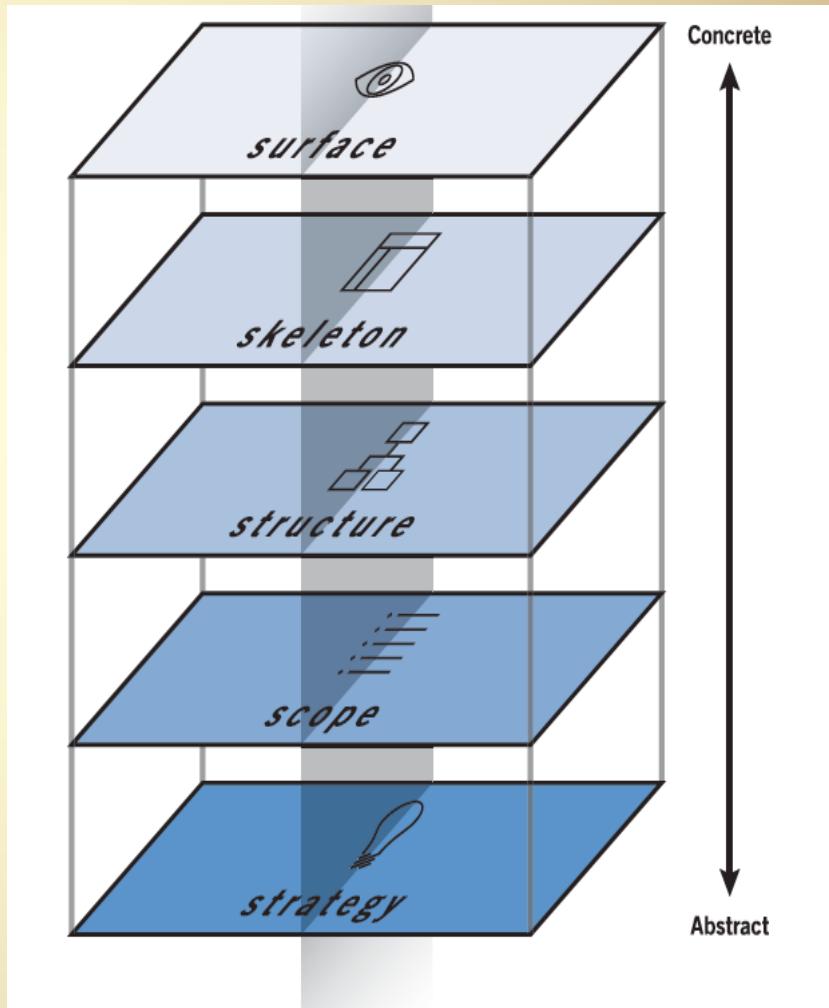
Context/Content

**Information Architecture**  
(Organisation, Navigation,  
Search, Labelling)

Wireframes

# What are wireframes?

- Visual designs showing how an individual page looks from an architectural perspective
- Connect information architecture to visual and information design
- Created for most important pages e.g. main page, search interfaces
- Not replacements for “real visual design.”



Adapted from Garrett, 2003



logo

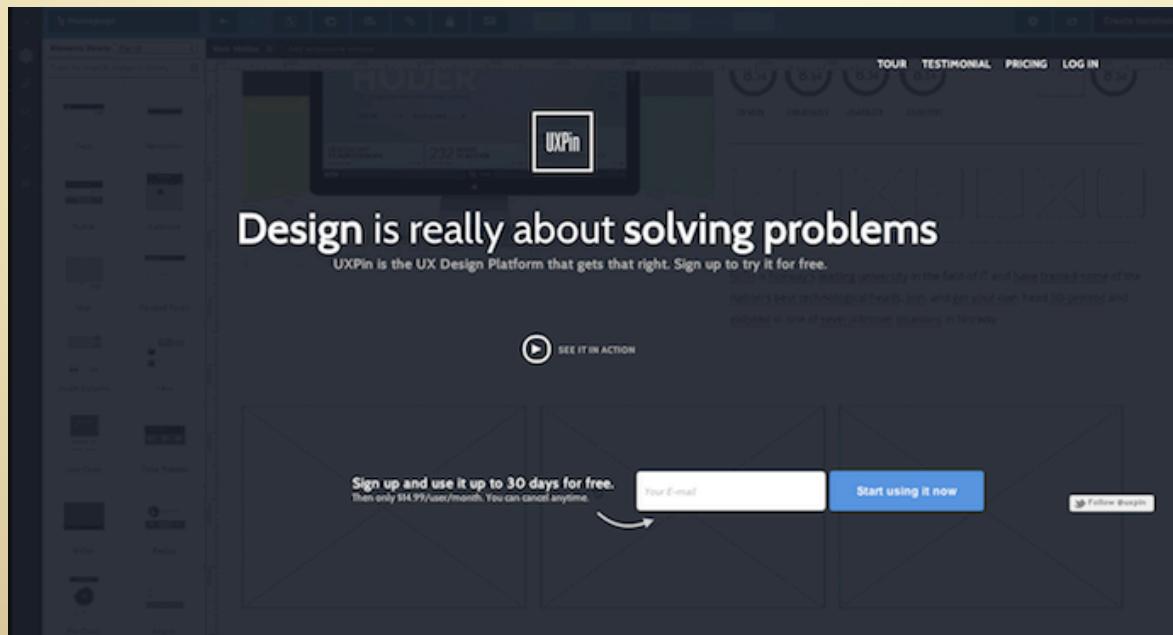
## Design is really about solving problems

UXPin is the UX Design Platform that gets that right! Sign up to try it for free.

Low-fidelity



VS.



High-fidelity

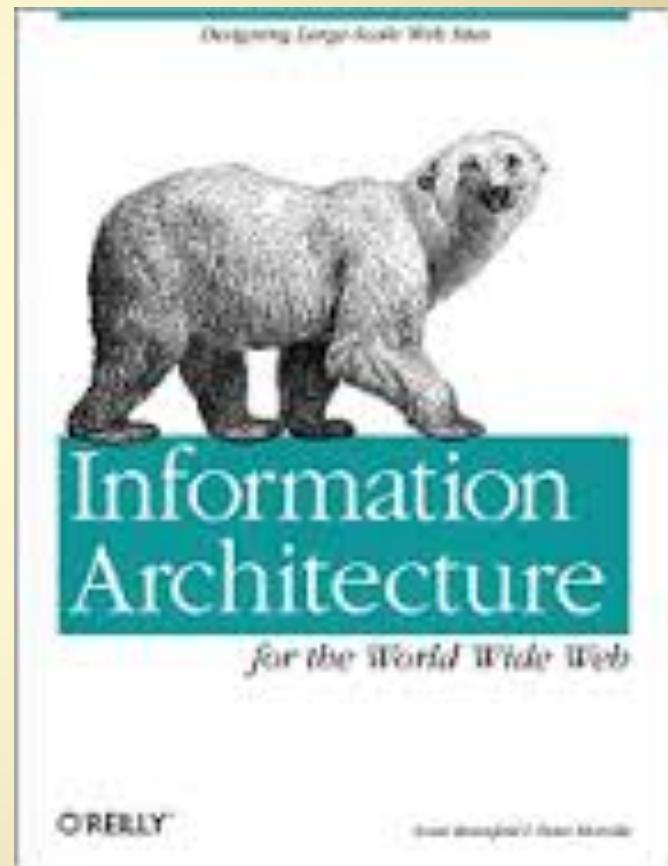
Adapted from Makosiewicz, 2014

# Why should I use them?

- UI Designers and Information Architects use them to show user flows between pages/screens
- Graphic Designers use them to inform the user interface design
- Developers use them to get a more visible idea of a product's functionality
- Business stakeholders (e.g. Product Managers) review them to check that requirements are met through the design

# Great reference book!

Morville, P., Rosenfeld, A.  
(2007). *Information  
Architecture for the World  
Wide Web*. Latest edition.  
Sebastopol, CA: O'Reilly  
Media Inc.



# Summary points

- ❑ Information architecture focuses on organising, structuring, and labeling content in an effective and sustainable way
- ❑ The main components of information architecture are organisation systems, navigation systems, search systems, and labeling systems
- ❑ To create these systems you need to understand user search needs and behaviours
- ❑ To identify and document information architecture you can use Card Sorting and Wireframes, respectively