

Visual Design Principles

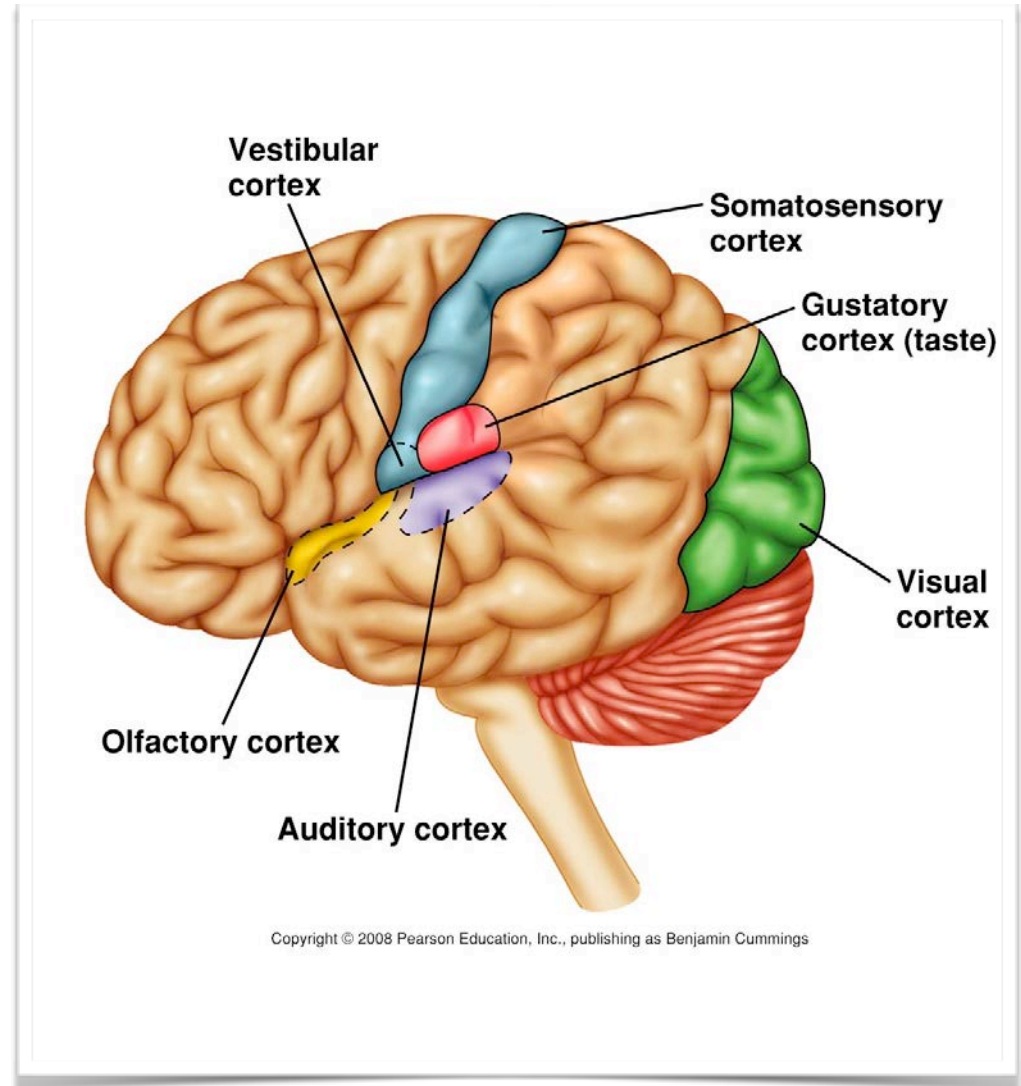
Chapter 14 (Cooper)
Plus extra material

School of Computer and
Communication Sciences

EPFL

Pearl Pu

- Visual cortex is the largest system in the brain
- Light rays enter the eye through the cornea and lens
- A 2D representation is formed



**Half of the brain's resources are dedicated to seeing
and interpreting what we see.**



WHAT IS VISUAL INTERFACE DESIGN?

- Visual interface design is concerned with creating an effective and engaging user interface
 - designers must know how to use visual properties: color, typography, form, and composition
 - they must also know how to use visuals to convey behavior and information

VID must not be an afterthought

WHAT IS VISUAL INTERFACE DESIGN?

How do we create visual elements on a UI to communicate *behavior* and *information*, all the while keeping it *efficient* and *stimulating*



Hue (color) & Typography

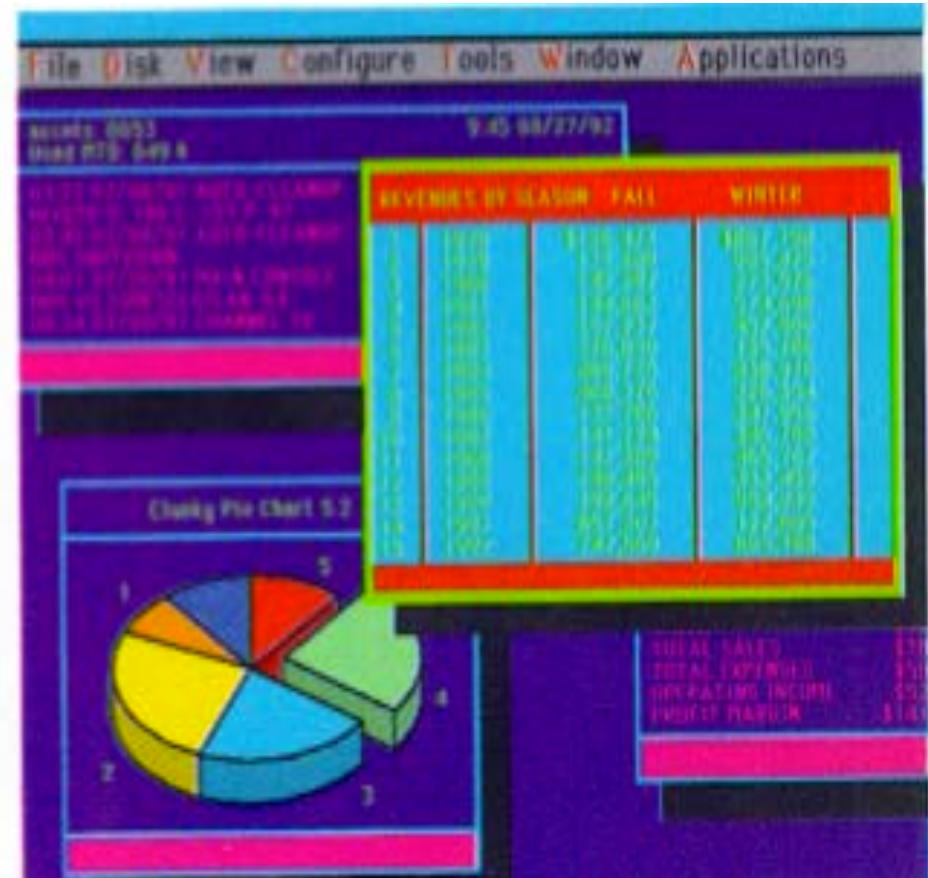
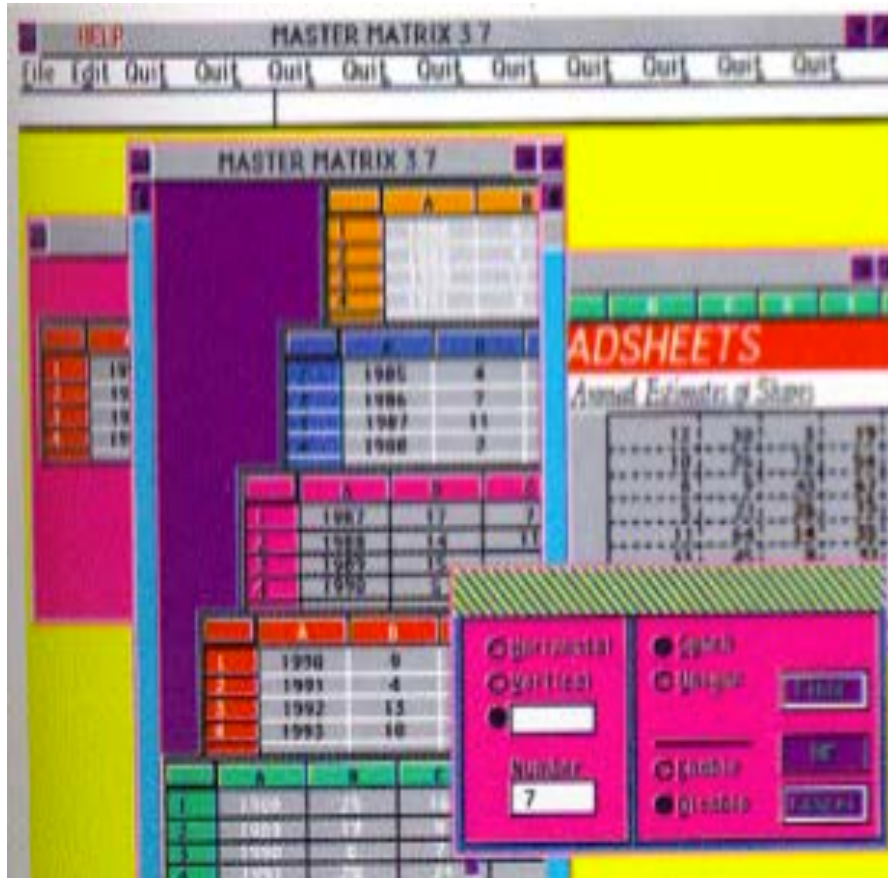


COLOR ATTRACTS ATTENTION

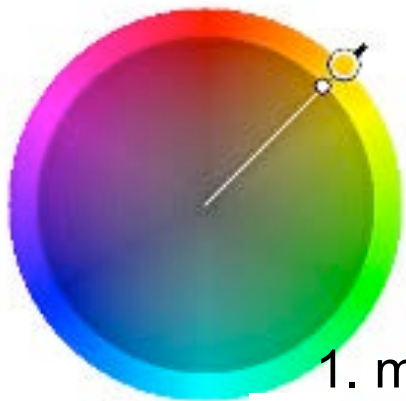
- Misconception: the more color an interface uses, the more attention it gets
- Excessive use of color results in color pollution, particularly when highly saturated colors are used



COLOR POLLUTION EXAMPLES



- Color theory
- Harmonious color combinations



1. monochromatic



2. complementary colors



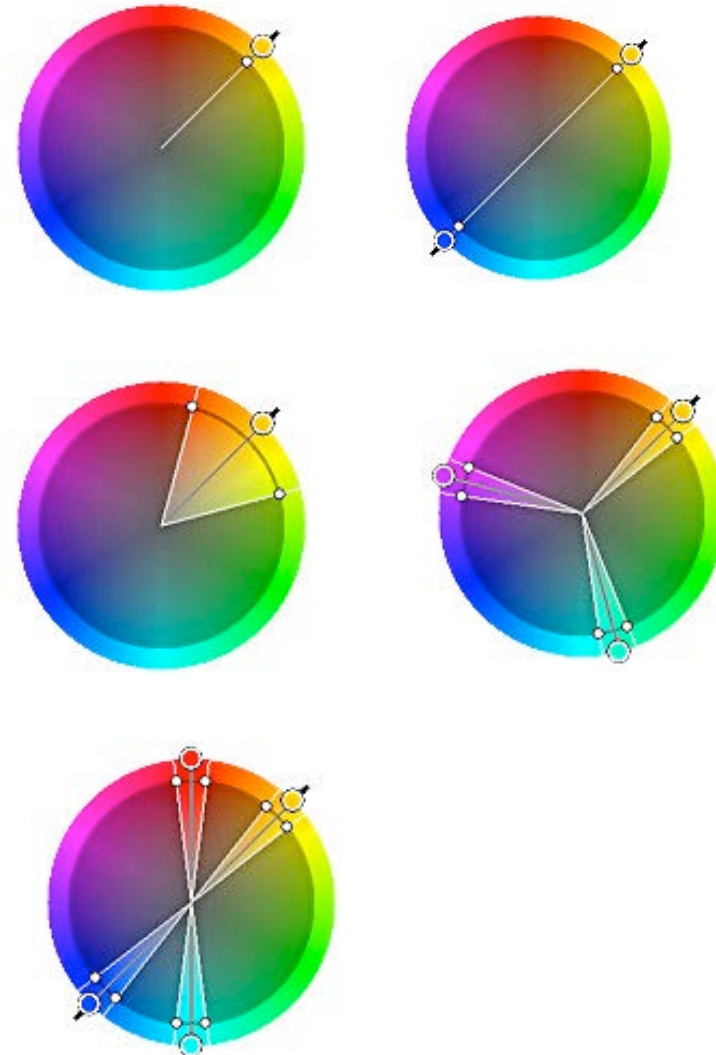
3. analogous colors

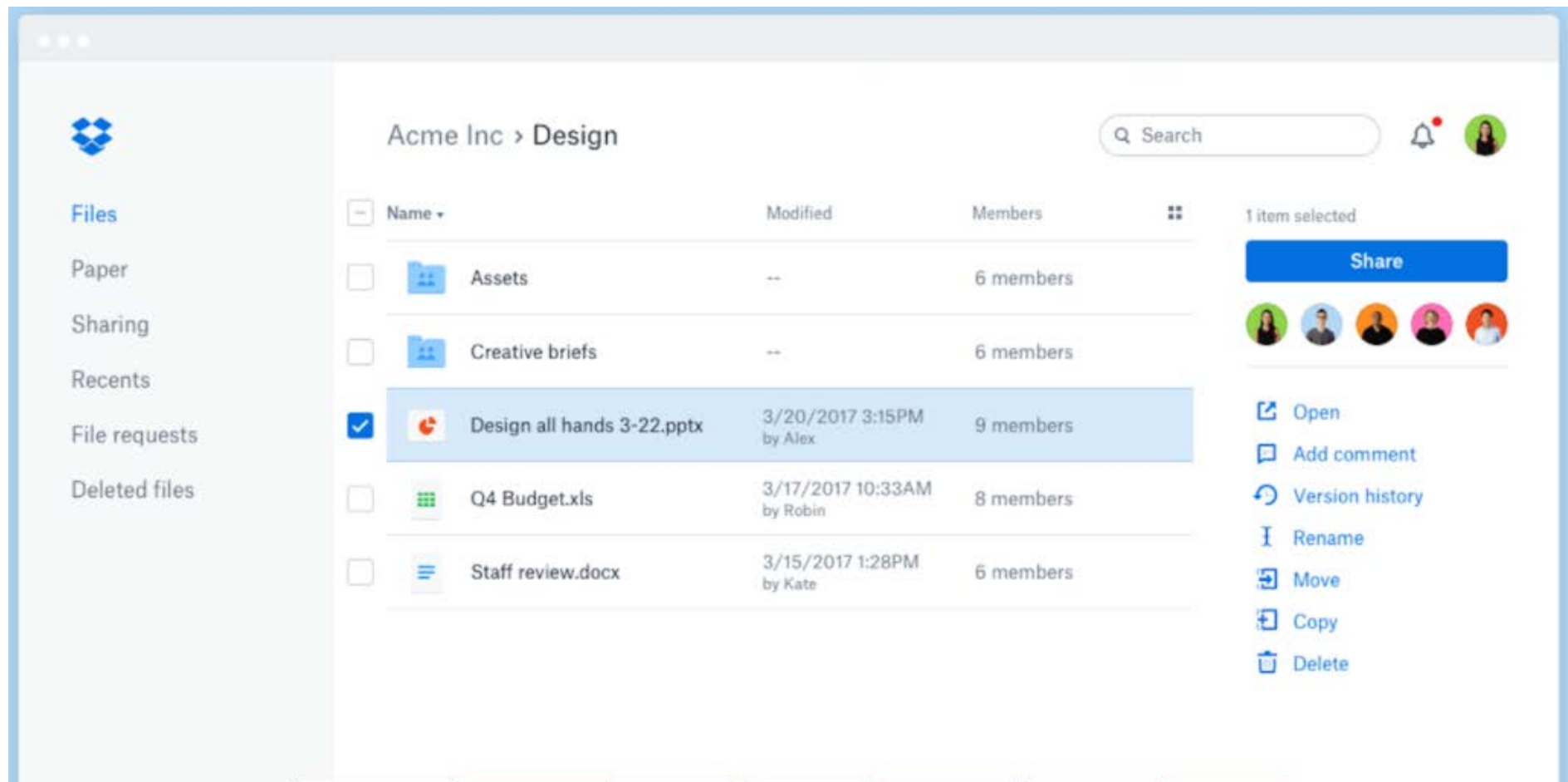
5. tetradic colors



4. triadic colors

- Monochromatic: looks clean and elegant
- Analogous: similar to mono, but offers more nuances
- Complementary: high contrast
- Triadic: contrasting and more balanced
- Tetradic: unbalanced, unless one is used as dominant color





Monochromatic color scheme

[Book](#)[Prepare](#)[Fly](#)[Explore](#)[+ GVA / EN](#)[Login](#)[Flight](#)[Flight & Hotel](#)[Hotel](#)[Rental car](#)[SWISS Choice](#)

From

Geneva **GVA**

To

Outbound flight

Su 25/03/2018

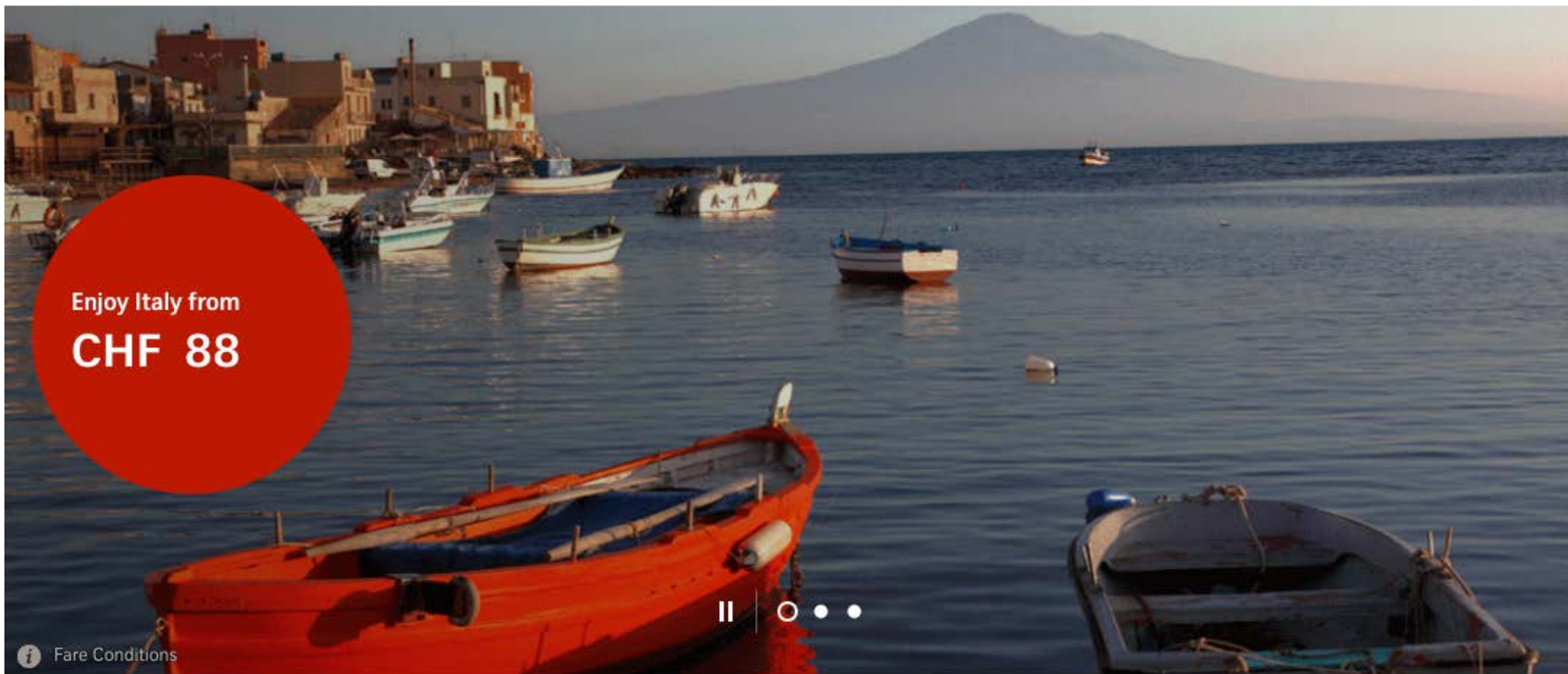


Return flight

Su 01/04/2018

1 Adult, 0 Children, 0 Infants

1 Passenger

[Advanced search ▶](#)[Arrivals and departures ▶](#)[Inspire me ▶](#)[Miles & More ▶](#)[Check-in ▶](#)[Search](#)

Monochromatic color scheme

Best Lodging in Bruges, Belgium
1
Review
Dennis
\$
US

Bruges
Hotels
Flights
Vacation Rentals
Restaurants
Things to Do
Forum
Best of 2016
More

Europe
Belgium
Flanders
West Flanders Province
Bruges
Bruges Hotels

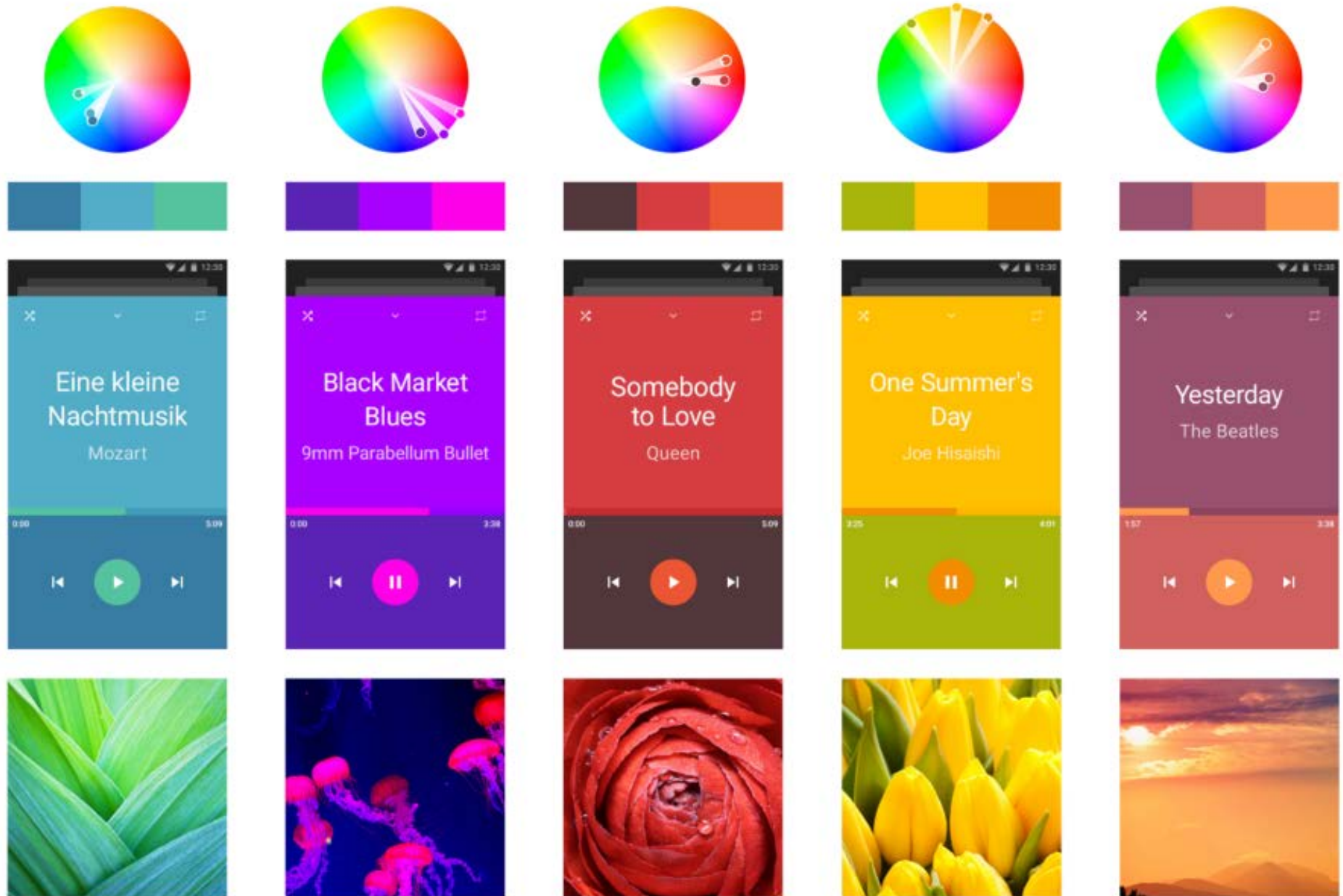
Bruges Hotels

Your Hotel Search

Sort by:
Traveler Ranked
Popularity
Lowest Price
Distance

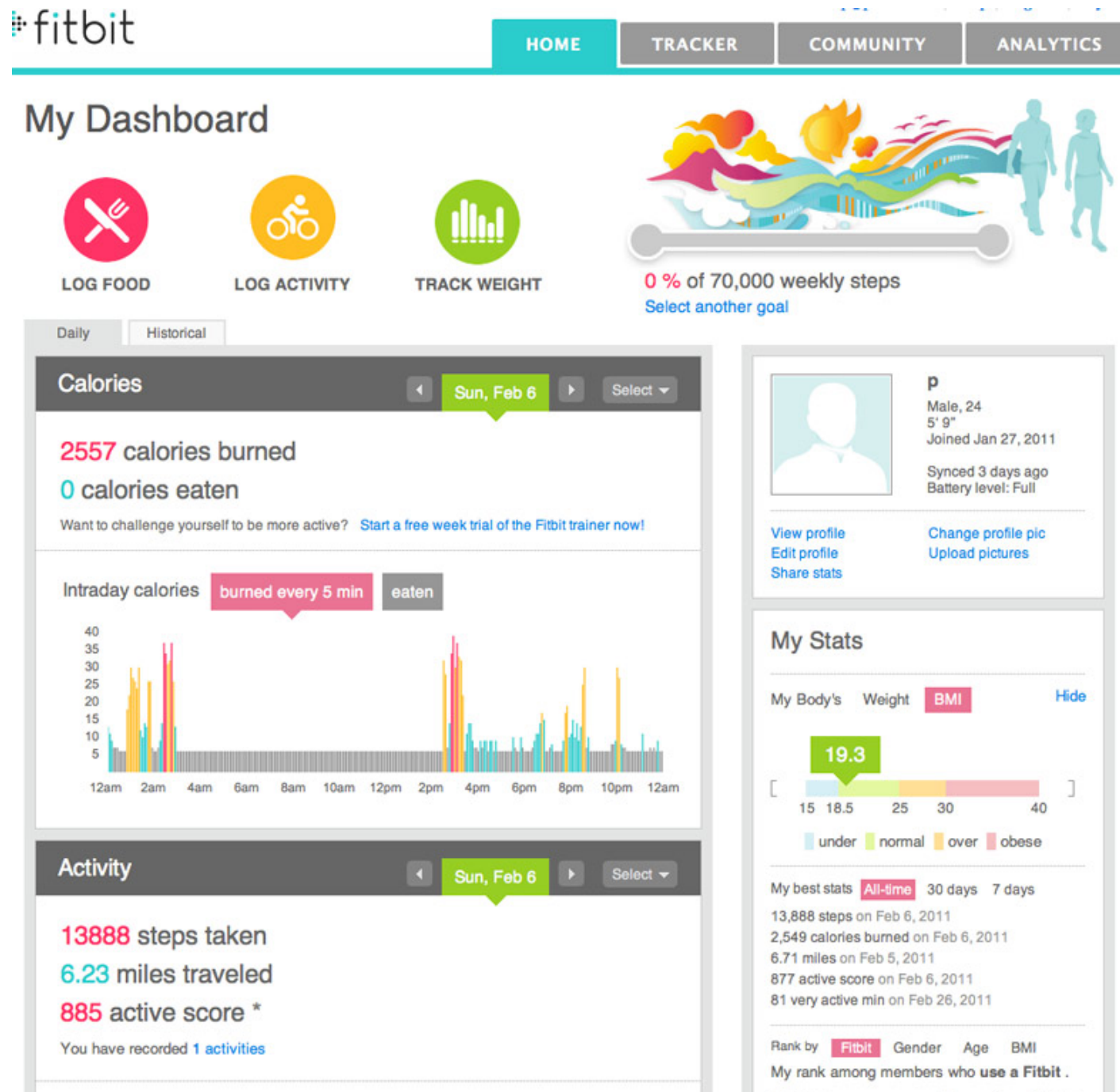
<p>Sponsored</p> <p>Grand Hotel Casselbergh Bruges</p> <p>2,987 Reviews</p> <p>#1 of 98 Hotels in Bruges by Popularity</p> <p>"Not quite up to expectations" 12/20/2016</p> <p>"Fairly good hotel, great location" 12/20/2016</p> <p>Travelers' Choice® 2016 Winner</p> <p>Luxury</p>	<p>\$120*</p> <p>/night</p> <p>View Deal</p>	<p>TripAdvisor \$120*</p> <p>Booking.com \$120*</p> <p>Hotwire.com \$120*</p> <p>View 4 deals</p>
<p>Grand Hotel Casselbergh Bruges</p> <p>2,987 Reviews</p> <p>#1 of 98 Hotels in Bruges by Popularity</p> <p>"Not quite up to expectations" 12/20/2016</p> <p>"Fairly good hotel, great location" 12/20/2016</p> <p>Luxury</p>	<p>\$120*</p> <p>/night</p> <p>View Deal</p>	<p>TripAdvisor \$120*</p> <p>Booking.com \$120*</p> <p>Hotwire.com \$120*</p> <p>View 4 deals</p>

Two-color analogous scheme



Triadic and analogous color scheme inspired by nature

Multi-color scheme





- Contrast text with its background
- Most web interfaces employ sans-serif fonts, e.g., Verdana, Tahoma, Arial, Helvetica.
- Cases: it's slower to read upper-case letters than lower-case letters (10% slower)
- Now look up and read the title of the slide. You may ask why I chose to use small caps?
- If you want users to pay attention to titles and keywords, you may want to put the entire word in upper case letters



DESIGN PRINCIPLES ON COLOR AND FONT

- Use a small color palette, opting for less-saturated ones and combining them with neutral colors
- Keep high-contrast accent colors for special controls
- Do not vary too much on typography (except sizes)



Create hierarchy

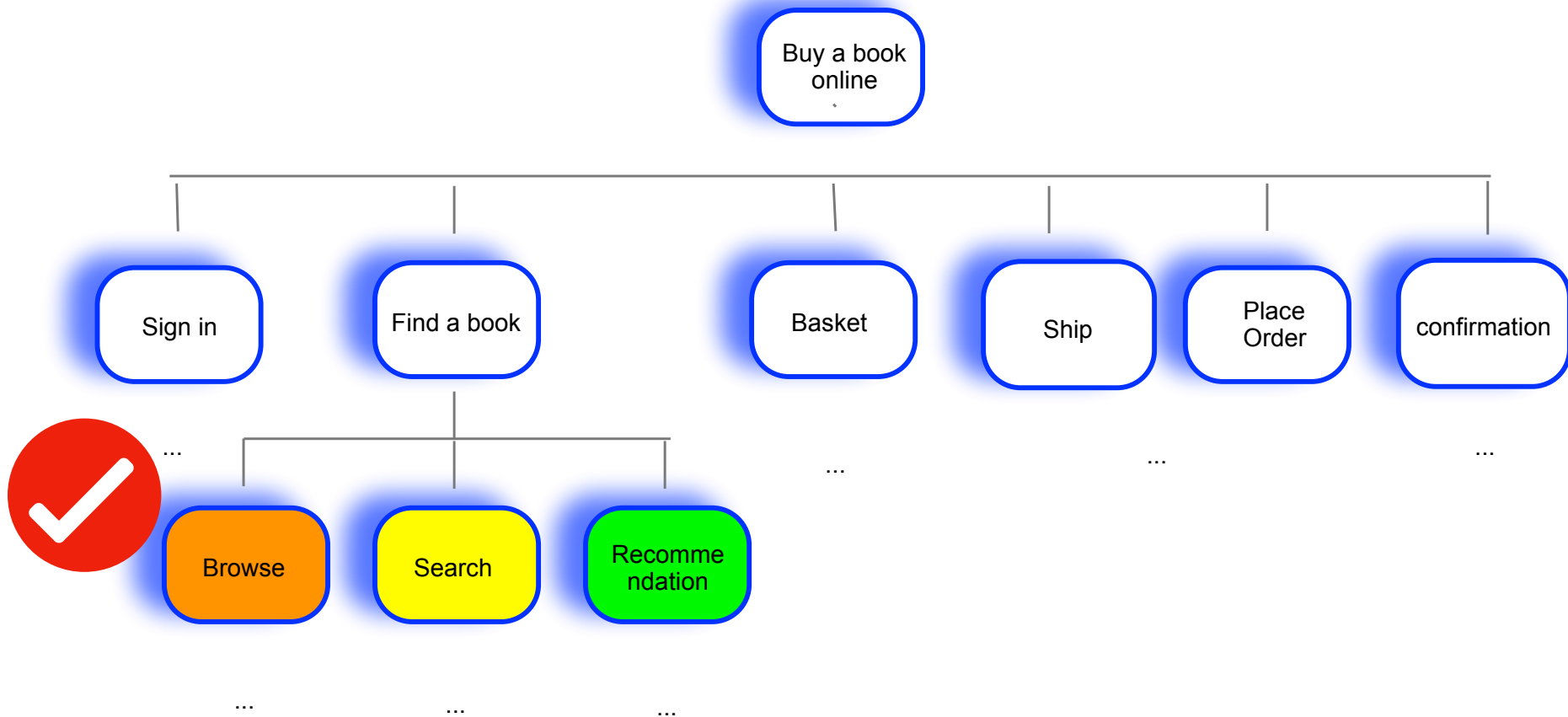
Visual hierarchy is a *visual rendering* of the information hierarchy.



HOW TO DO THAT?

- Based on scenarios, determine what users need to understand: instantly, secondary, exceptionally; i.e., what is the information delivery priority?
- This ranking informs the visual hierarchy

Goal-Directed Task Tree



For illustrating search/browse/recommend;
it's otherwise not complete

Amazon Best Sellers

Our most popular products based on sales. Updated hourly.

◀ Any Department

◀ Books

Science & Math

Agricultural Sciences

Archaeology

Astronomy & Space Science

Behavioral Sciences

Biological Sciences

Chemistry

Earth Sciences

Environment

Essays & Commentary

Evolution

Experiments, Instruments & Measurement

History & Philosophy

Mathematics

Nature & Ecology

Physics

Reference

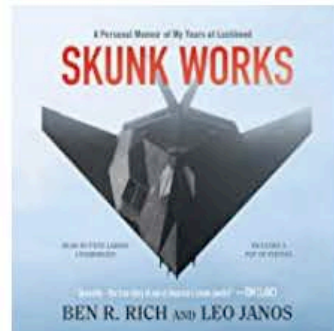
Research

Science for Kids

Technology

Best Sellers in Science & Math

#1



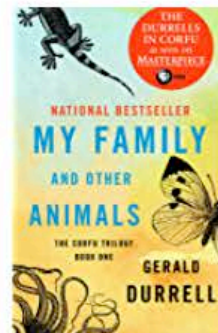
Skunk Works: A Personal Memoir of My Years of...
Ben R. Rich

★★★★☆ 762

Audible Audiobook

\$0.00 Free with Audible trial

#2



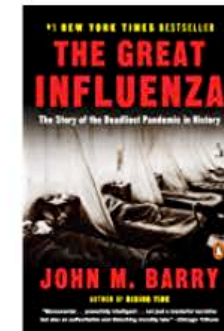
My Family and Other Animals (The Corfu Trilogy...
Gerald Durrell

★★★★☆ 1,553

Kindle Edition

1 offer from \$1.99

#3



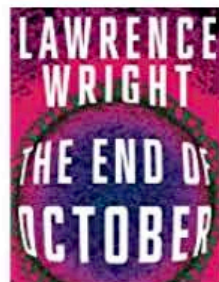
The Great Influenza: The Story of the Deadliest...
John M. Barry

★★★★☆ 923

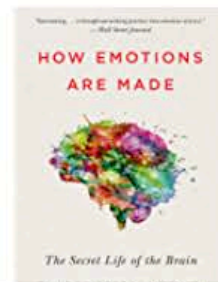
Kindle Edition

\$4.76

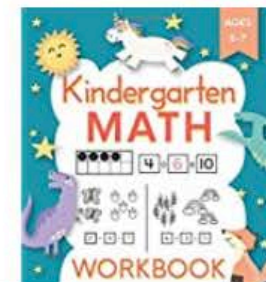
#4



#5



#6



eGift cards
for every

- In most cases, there are only two levels of IH, thus two VH (most important vs. not so important)
- Most important items are “verbs” and they often represent control items (buttons)
 - Sign up
 - Confirm
 - Register
 - Add to cart
 - Place order
- These “call to action” items are important for users finish the tasks and for businesses (transaction)



DESIGN FOR USER ATTENTION

- Use hue, saturation, value, size, and position to distinguish levels of hierarchy
- The most important elements should be larger, have greater contrast in hue, saturation, and value in relation to the background, and be positioned above or outdented in relation to other items.

Review your order



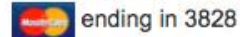
Important message

☐ Check this box to default to these delivery and payment options in the future.

Shipping address [Change](#)

Paris Hilton
HILTON NEW ORLEANS RIVERSIDE
2 POYDRAS ST
NEW ORLEANS, LA 70130-1656
United States
Phone: +1 504-561-0500

Payment method [Change](#)



ending in 3828

Billing address [Change](#)

Same as shipping address

Gift cards & promotional codes



[Click Here and Save \\$7.58 on this Order: Amazon Customer, don't forget about FREE Two-day Shipping for your Prime eligible items. Also enjoy unlimited fast, FREE shipping on all future Prime orders.](#)

» Special Offer: Get your One-Week Trial of Amazon Prime for only \$1.99. Afterwards, Prime is just \$12.99/month. Cancel anytime.

Estimated delivery: April 13, 2018



TOPLUS 6mm Premium TPE Yoga Mat with Carrying Strap Eco Friendly Fitness Exercise Mat, 72" x 24", Purple
\$24.99

Amazon Prime eligible [Join now](#)

Quantity: 1 [Change](#)

Sold by: Toplus Collection

☐ Add a gift receipt

and see other gift options

Choose a delivery option:

- ☒ **Friday, April 13**
\$7.58 - Standard Shipping
- ☐ **Tuesday, April 10**
\$13.43 - Two-Day Shipping
- ☐ **Monday, April 9**
\$21.88 - One-Day Shipping

Place your order in CHF

By placing your order, you agree to Amazon's [privacy notice](#) and [conditions of use](#).

Amazon Currency Converter is Enabled. [Learn more](#)

Order Summary

Items:	CHF 25.00
Shipping & handling:	CHF 7.58
Total before tax:	CHF 32.58
Estimated tax to be collected:	CHF 0.00

Order total: CHF 32.58

Selected payment currency

☒ CHF ☐ USD

[\(Change card currency\)](#)

Applicable Exchange Rate

1 USD = 1.0002204797 CHF

[\(includes all Amazon fees and charges\)](#)

[How are shipping costs calculated?](#)

[Why didn't I qualify for free shipping?](#)

Squint Test



DO NOT OVER EMPHASIZE

- Don't use all emphasis techniques at once - often one is enough
- If two items are different in importance, tune down the less important one
- A good visual hierarchy is hardly noticed by users
- Only the lack of one jumps out at users



Establish relationships



TWO TYPES OF RELATIONSHIPS

- Based on scenarios (or task trees), determine
 - which elements have similar functions
 - which elements are used together
- Elements have similar functions are grouped visually even if they are not grouped spatially (semantic groups)
- Elements most often used together are grouped spatially to minimize mouse and eye movement (spatial groups)



HOW TO MAKE GROUPS VISIBLE?

- Use visual consistency to mark semantic groups. For example, all search buttons should look the same.
- Use space, lines, boxes, color, and alignment to make spatial groups.

EXAMPLES OF GROUPING

Bad

Mmmm:

Mmmm:

Mmmm:

Mmmm:

Mmmm:

Good

Mmmm:

Mmmm:

Mmmm:

Mmmm:

Mmmm:

Excellent

Mmmm:

Mmmm:

Mmmm:

Mmmm:

Mmmm:

All Departments

yoga mat

Keyless entry and guest access

Deliver to Greece

Departments

Recommended For You

Today's Deals

Gift Cards

Registry

Sell

Help

EN

Hello. Sign in

Account & Lists

Orders

Try Prime

Cart

1-24 of over 4,000 results for Sports & Outdoors : Sports & Fitness : Exercise & Fitness : "yoga mat"

Sort by Relevance

FREE Shipping

All customers get FREE Shipping on orders over \$25 shipped by Amazon.

Show results for

Any Category

Sports & Outdoors

Sports & Fitness

Exercise & Fitness

Yoga Mats

Exercise Mats

Yoga Towels

Yoga Mat Bags

Pilates Floor Mats

Yoga Blocks

Yoga

Yoga Straps

Yoga Starter Sets

Straps

See more

Refine by

International Shipping (What's this?)

Ship to Switzerland

Subscribe & Save

Subscribe & Save Eligible

Amazon Prime

Eligible for Free Shipping

Free Shipping by Amazon

Avg. Customer Review

★★★★★ & Up

★★★★★ & Up

★★★★★ & Up

★★★★★ & Up

Price

Under \$25

SPONSORED BY WITHIT

Yoga Necessities at Great Prices

Shop now

French Bull Yoga Block (Ziggy)

prime ★★★★★ 2

French Bull - Yoga Strap (Blue Om...)

prime ★★★★★ 2

French Bull - Hand Towel 2-pack (...)

prime ★★★★★ 1

Showing results in Sports & Outdoors. Show instead results in All Departments.

ASUTRA 100% Natural & Organic Yoga Mat Cleaner, SAFE FOR ALL MATS, No Sticky Or Slimy Residue - Cleans, Restores, Refreshes + FREE Microfiber...

by ASUTRA

\$10⁴⁰

Subscribe & Save

Save more with monthly Subscribe & Save deliveries.

\$10⁹⁵

prime

Some colors are Prime eligible

FREE Shipping on eligible orders

★★★★★ 2,874

Amazon's Choice

ASUTRA 100% Natural & Organic Yoga Mat Cleaner, SAFE FOR ALL MATS, No Sticky Or Slimy Residue - Cleans, Restores, Refreshes + FREE Microfiber...

by ASUTRA

\$10⁴⁰

Subscribe & Save

Save more with monthly Subscribe & Save deliveries.

\$10⁹⁵

prime

Some colors are Prime eligible

FREE Shipping on eligible orders

★★★★★ 2,874

Sponsored

Youmako TPE Yoga Mat 6mm Non-Slip Thick High Density Used for Exercise, Outdoor & home (black)

by youmako

\$23⁵⁹

prime

Some colors are Prime eligible

FREE Shipping on eligible orders

★★★★★ 19

Sponsored

Manduka eKO Lite Yoga and Pilates Yoga Mat

by Manduka

\$46⁰⁷

\$52.00

prime

Some sizes/colors are Prime eligible

FREE Shipping on eligible orders

★★★★★ 295

Best Sellers

AmazonBasics 1/2-Inch Extra Thick Exercise...

\$17⁹⁹

prime

BalanceFrom GoYoga All-Purpose 1/2-Inch...

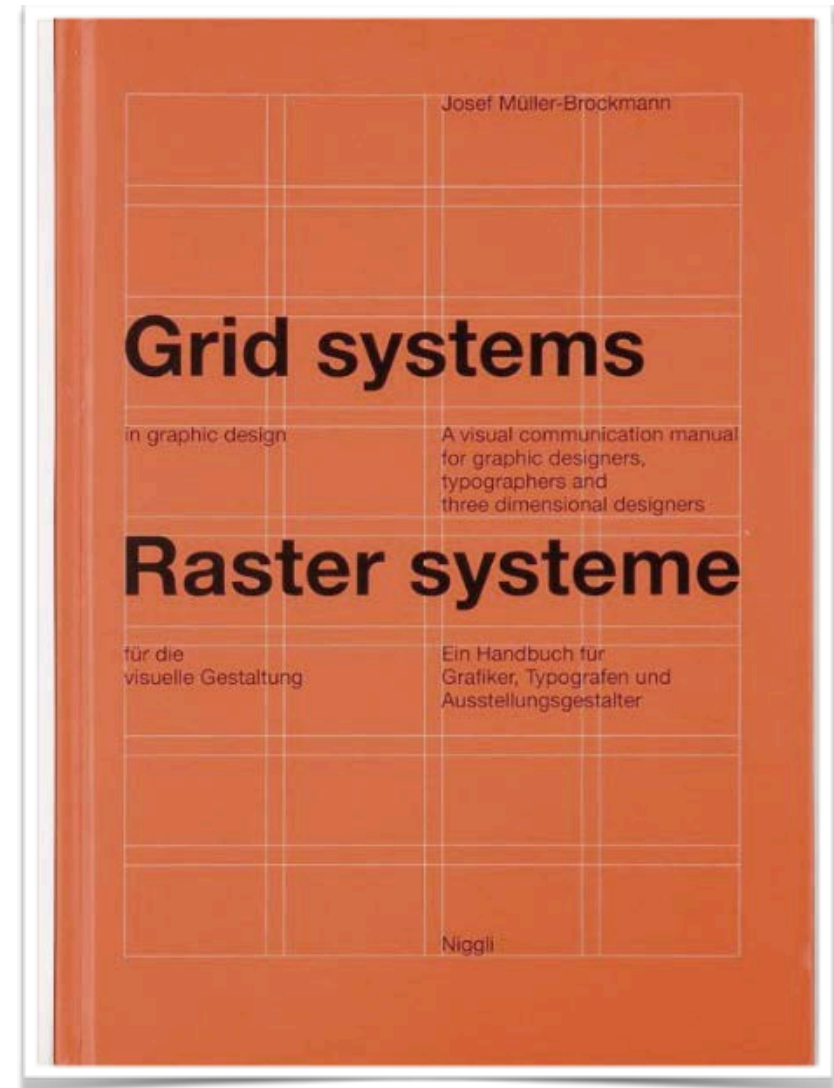
\$17⁹⁵

prime

Grouping is achieved mainly by alignment and spacing with some thin lines.

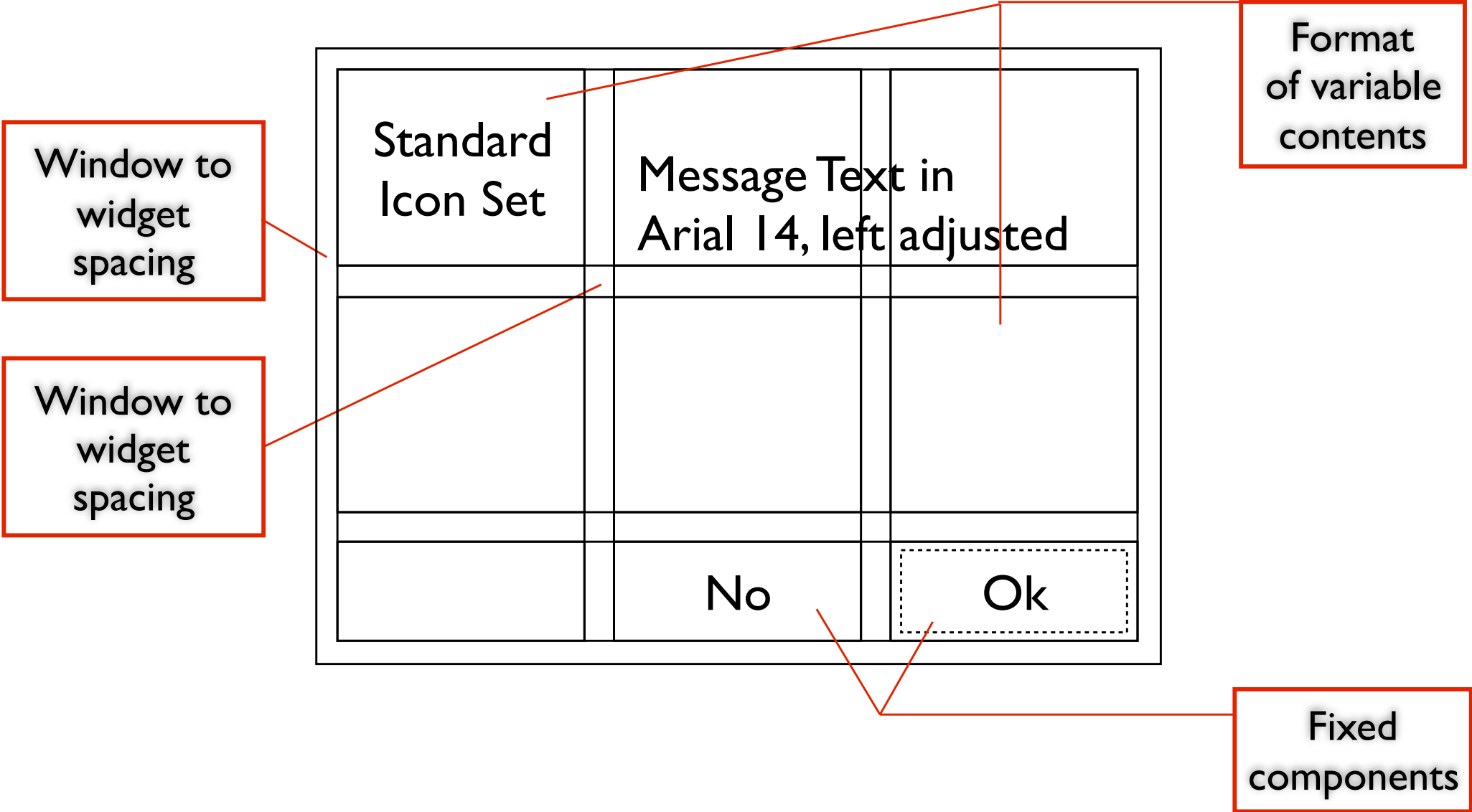
USE THE GRID SYSTEM

- ***Grid system***
 - a related set of check boxes, radio buttons, or text fields should be aligned according to a regular grid
 - groups of controls and other screen elements should all follow the same grid whenever possible
 - Popularized by Swiss typographers





GRID TEMPLATE WITH CONTROL ITEMS




Good:

Standard Icon Set	Message Text in Arial 14, left adjusted	
	No	Ok



?	Do you really want to delete the file "myfile.doc" from the folder "junk"?
	No Ok

Bad:

	
The file was destroyed	Apply Cancel

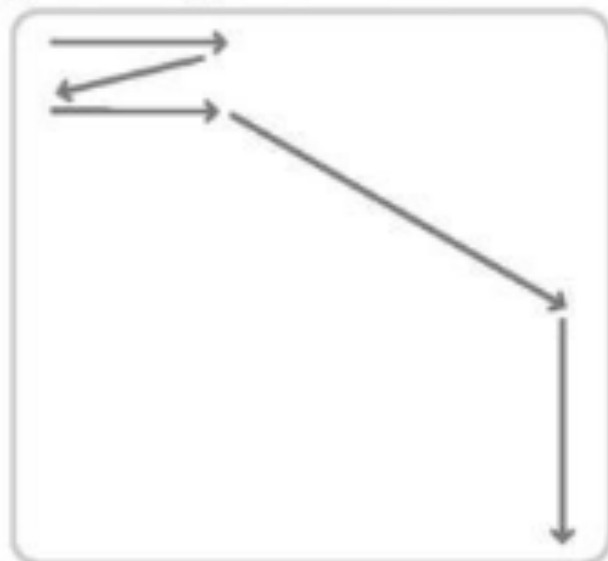
Slide from Saul Greenberg



Create a Logical Path

Good logical flow

Eye movements match the path through the interface



Bad logical flow

Everything is all over the place

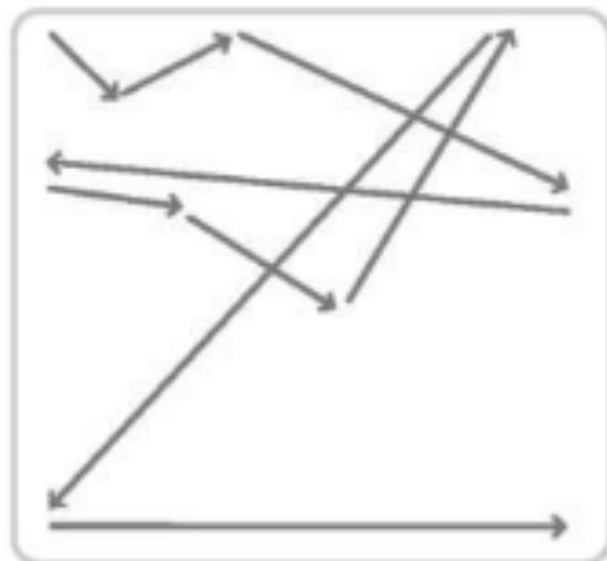


Figure 14-3 Eye movement across an interface should form a logical path that enables users to efficiently and effectively accomplish goals and tasks.



HOW TO CREATE A LOGICAL PATH?

- Use the task tree and create a task flow
 - Pay attention to the “and” tasks. This implies some tasks are done before others
 - For example, on amazon, we would expect users to first find books, put them into the shopping basket one by one, check out, pay, get confirmation (e-commerce site for buying books)
- Make this path correspond to how we read content on the screen.



DESIGN PRINCIPLES FOR VID

1. Use visual properties to **group** elements (organization and grouping)
2. Use hue, saturation, value, and position to distinguish levels of **hierarchy** (visually operationalise the hierarchy)
3. The most important elements should be larger, have greater contrast in hue, saturation, and value in relation to other items (bring out the MIT, the most important thing)
4. Don't use all emphasis techniques at once – often one is enough (do not overemphasize)
5. If two items are different in importance, tune down the less important one (less is more)
6. Put related items spatially together to minimize mouse and eye movement (**proximity** of content)
7. Put controls next to items being controlled (**proximity** of controls)
8. Make functionally similar items visually the same
9. Create visual structure using **alignment** and grid (alignment)
10. Create a **logical path** (logical path)



Examples and critiques of visual interface design

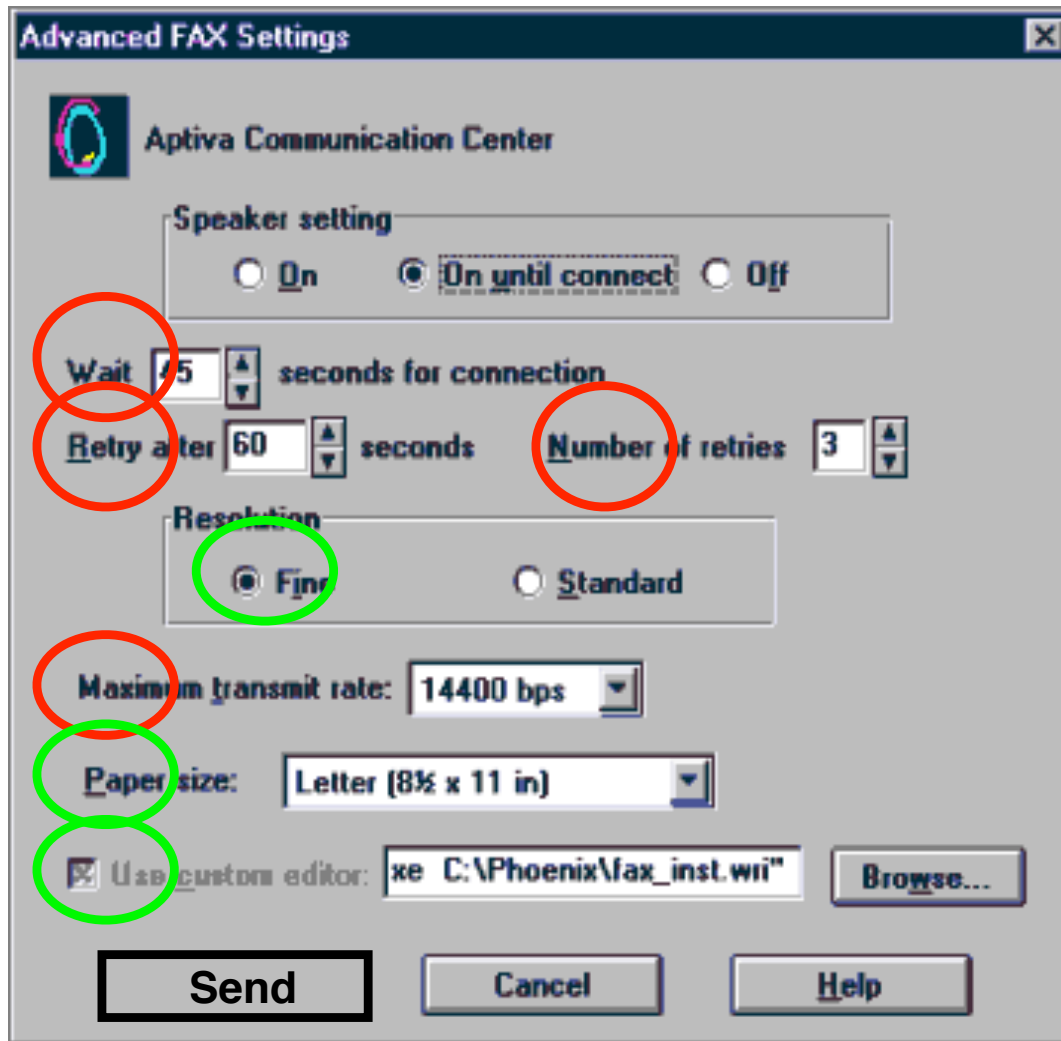


CONFUSING CONTROLS WITH DATA ELEMENTS

Find these examples at
<http://hallofshame.gp.co.at>

Form Title -- (appears above URL in most browsers and is used by W/W/W search)		Background Color:
Q&D Software Development Order Desk		FFFBF0
Form Heading -- (appears at top of Web page in bold type)		Text Color:
Q&D Software Development Order Desk <input checked="" type="checkbox"/> Center		000080
E-Mail responses to (will not appear on)	Alternate (for mailto forms only)	Background Graphic
dversch@q-d.com		
Text to appear in Submit button	Text to appear in Reset button	<input type="radio"/> Mailto
Send Order	Clear Form	<input checked="" type="radio"/> CGI
Scrolling Status Bar Message (max length = 200 characters)		
WebMania 1.5b with Image Map Wizard is here!		
<< Prev Tab		Next Tab >>

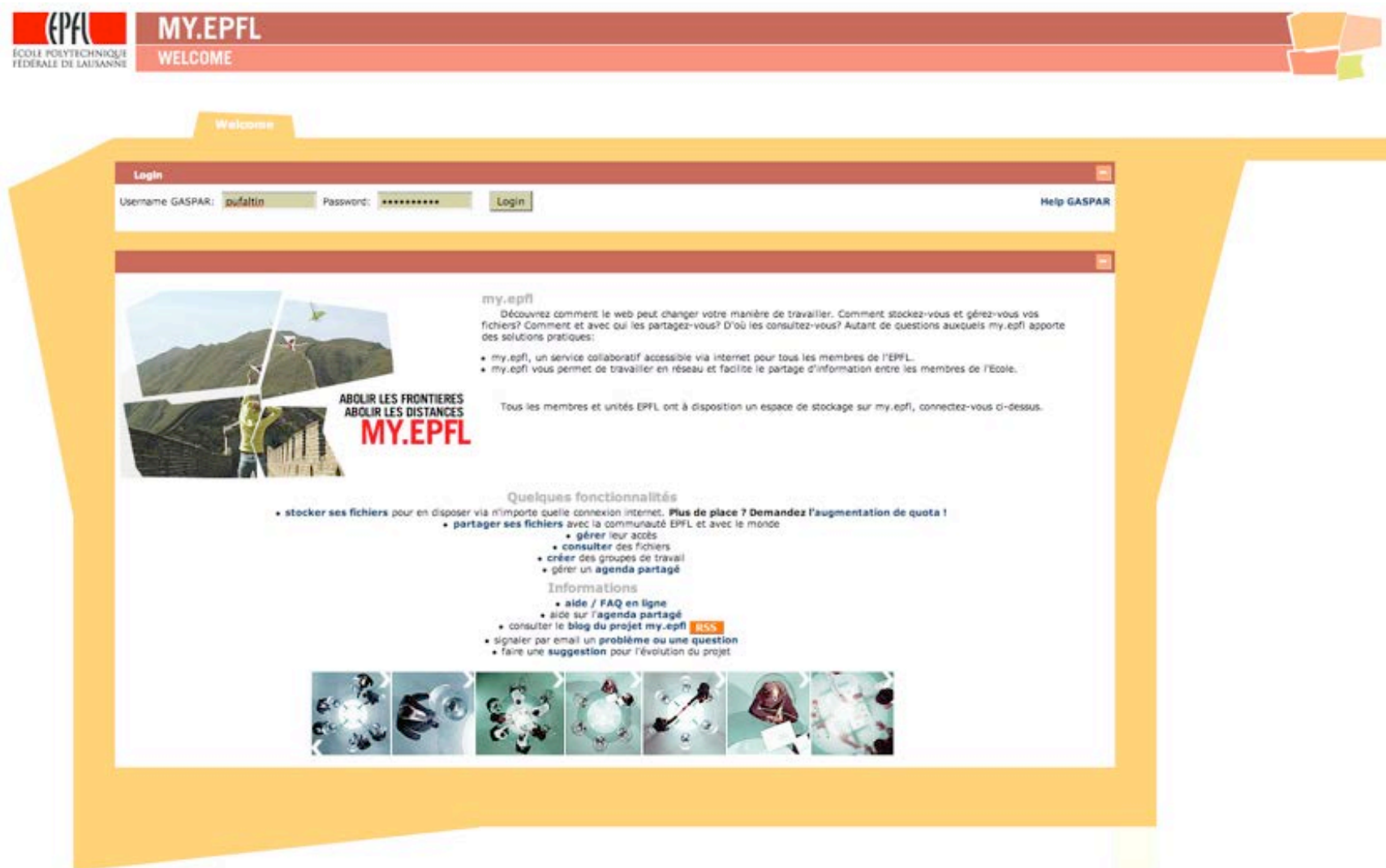
POOR GROUPING AND VISUAL DESIGN



Did not respect user task order (violation of logical path principle); did not provide organization; alignment is poor

Reference: IBM's Aptiva Communication Center

POOR COLOR SCHEME, ORGANISATION, AND VIH



Dashboard

My account

12

Embed code

Billing

Settings

Dashboard

STREAM SETTINGS

Stream with

Windows Media Server

Select a vhost

3553

Updating



SHORTCUTS

[Statistics](#)

You have 1 overdue invoice with total of \$19.9

TRAFFIC USED



Calendar

Documents

Groups

Calendar

Create new event Export view as PDF

Day Week Compact Full Month

07/05/201

Close views and calendars management

	Mon 06/05	Tue 07/05	Wed 08/05	Thu 09/05	Fri 10/05	
7:00	TA meeting for the first week 11:00 AM - 12:00 PM	TA meeting for the first week 11:00 AM - 12:00 PM	TA meeting for the first week 11:00 AM - 12:00 PM	TA meeting for the first week 11:00 AM - 12:00 PM	TA meeting for the first week 11:00 AM - 12:00 PM	<div>▼ Invitations</div> <div>Add in calendar private 1</div> <div>Usual meeting - Valentina Sintsova (See)</div> <div>▼ Views</div> <div>Default 1</div> <div>private</div> <div>▼ Calendars</div> <div>my calendars 1 New</div> <div>add to view - Default -</div> <div>private</div> <div>Inbox</div> <div>Outbox</div> <div>▼ Availabilities</div> <div></div>
8:00						
9:00						
10:00						
11:00						
12:00						
13:00						
14:00						
15:00						
16:00						
17:00						
18:00						
19:00						



Travel-o-Guide

Your travel mate

[Home](#) [My Account](#) [Search Trip](#) [Create Trip](#) [Contact](#)

Login

User ID
Password

[Forget your ID or Password](#)

Search by Trip Code

Enter 4 digit code



Popular Destinations



[Caribbean Islands](#)
[Vienna](#)
[Mexico](#)
[Lahore](#)

Customer Support



We are here to help:
1-800-TRAVELO

Today's Trips

- [Adventure in Amazon](#)
- [Skiing in Swiss Alps](#)
- [Cruising in Sahara](#)

Hot Promotions!

- [Vacation Package](#)
- [Hotels Discounts](#)
- [Cheap Flights](#)

Today's Travel Story

[Whisky bucket a mistery](#)

It started out to be a great night (night before the FMP). Me and two friends were sitting on the beach at dusk. [Read More](#)

Search

Travel Theme

- | | | |
|--|---|-------------------------------------|
| <input type="checkbox"/> culturist | <input type="checkbox"/> shopper | <input type="checkbox"/> discoverer |
| <input type="checkbox"/> relaxer | <input type="checkbox"/> comfort seeker | <input type="checkbox"/> beach bum |
| <input type="checkbox"/> travel enthusiast | <input type="checkbox"/> sportsman | <input type="checkbox"/> adventurer |

Destination

Continent

Country

City

Duration

-

From

To

Budget

\$





Travel-o-Guide

Your travel mate

[Home](#) [My Account](#) [Search Trip](#) [Create Trip](#) [Contact](#)



Login

User ID
Password

[Forget your ID or Password](#)

Search by Trip Code

Enter 4 digit code

Customer Support



We are here to help:
1-800-TRAVELO

Search

Travel Theme

- | | | |
|---|---|-------------------------------------|
| <input checked="" type="checkbox"/> culturist | <input type="checkbox"/> shopper | <input type="checkbox"/> discoverer |
| <input type="checkbox"/> relaxer | <input type="checkbox"/> comfort seeker | <input type="checkbox"/> beach bum |
| <input type="checkbox"/> travel enthusiast | <input type="checkbox"/> sportsman | <input type="checkbox"/> adventurer |

Destination

Europe Country City

Duration

Weekends From 01/09/30 To 30/09/30

Budget

500

Today's Trips



- [Skydiving in Swiss Alps](#)
- [Adventure in Amazon](#)
- [Cruising in Sahara](#)

Hot Promotions!



- [Vacation Package](#)
- [Hotels Discounts](#)
- [Cheap Flights](#)

Popular Destinations



- [Brazil](#)
- [Vienna](#)
- [Mexico](#)

Today's Travel Story

[Whisky bucket a mistery](#)

It started out to be a great night (night before the FMP). Me and two friends were sitting on the beach at dusk.. sipping on a nice cold Chang beer, looking around and laughing to ourselves about what a great place this was and saying we wouldnt want to be anywhere else in the world. [Read More](#)



Dropbox



Free for [Windows](#), [Mac](#), [Linux](#), and [Mobile](#)

Download Dropbox

First name

Last name

Email

Password

☐ I agree to [Dropbox Terms](#)

Sign up

**VID is simple for a simple user task;
visual hierarchy is clear**

