Design an app's UX in a day

Billy Hollis

Agent Provocateur

Next Version Systems / Next Version Studios

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If you do front ends... you do UX design

But probably not as well as you should

- Crowded screens
- Walls of data grids
- Important information does not stand out

Nhizbang Business A	App Circa 1995
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"For the history of software, it's been good enough to make things possible. Now success also depends on making things easy."

UX design can help avoid catastrophic failure



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SOFTWARE // ENTERPRISE APPLICATIONS

NEWS

12/12/2013

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Avon Pulls Plug On \$125 Million SAP Project



Avon halts its global rollout of an SAP order management system after a Canadian pilot project prompts reps to quit in frustration.

Doug Henschen News

Connect Directly

† in У

Avon has halted the global rollout of an SAPbased order management system after a failed deployment in Canada, <u>The Wall Street</u> <u>Journal reported</u> late Wednesday.



"Avon halts its global rollout... after a Canadian pilot project prompts reps to quit in frustration."

Speaking of design catastrophes: Windows 8

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\leftarrow \rightarrow \circlearrowright Ingroup.com/articles/windows-8-disappointing-usability	Ш ☆	
☆ New Tab 🎽 Instapundit 👘 QandO 🙀 Ace ☆ Youtube 💾 Common 📑 Watchlist 📑 Fall 2015 📑 Early 2016 📑 Spring 2016		
NN/g Nielsen Norman Group Evidence-Based User Experience Research, Training, and Consulting		Search
HOME TRAINING CONSULTING REPORTS ARTICLES ABOUT NN/G		
Windows 8 — Disappointing Usability for Both Novice and Power Users by JAKOB NIELSEN on November 19, 2012 Topics: Mobile & Tablet Technology Summary: Hidden features, reduced discoverability, cognitive overhead from dual environments, and reduced power from a single-window UI and low information density. Too bad.		

But it's probably not that big a risk for you.

Your risk is leaving money on the table.

Potentially, lots of money...



Estimating ROI for design

- Internal corporate software
 - User productivity
 - Reduced errors
 - Reduced training
- ISV software package or software as a service
 - Better sales
 - Improved customer retention
 - Reduced technical support

User productivity estimates need

- The number of users
- The average number of hours per day that a user operates the application
- The loaded cost per user per year (salary plus benefits plus overhead such as computers and office space)
- The estimated productivity savings of better user experience, expressed as a percentage
 - Typical successful design gets at least 10%
 - Even a basic design effort will probably yield at least 5%

Boring math stuff

- U is the number of users
- H is the number of hours of usage per day
- L is the loaded cost per user
- P is the percentage of improvement in productivity
- The formula for savings is simple:

```
(H / 8) * U * L * (P / 100)
```

That's why spreadsheets were invented

- Similar formulas for reduced errors and reduced training
- I have a spreadsheet with the formulas
- Does a total estimate for potential corporate application UX savings
- Let me show it to you briefly

• You can have it – just ask

Intangible returns too

- User satisfaction reduced stress
- Better emotional connection to your company

Name	Sherlock Holmes	Master Header	1B-2B-3			ſ	Demographic	s Fis	sure Table D	inglepla	ons Raster	nos	sums	
Street	221B Baker St.	Override Auth	1-1A-2B			i F	5.		d StopETA		Arriva			StopDesc
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UX impact for ISVs

- Increased sales
- Increased retention of existing customers
- Reduced tech support

If the package is far enough behind the times, risk is that a competitor will swoop in with a modern app – this can be a threat to your company's existence

Getting those returns

- Not about aesthetics
- You need to design UX that:
 - Has clean, fast app navigation
 - Helps users find information they need quickly
 - Visualizes data the way users need to see it

Aesthetics are important, but...



Show your users data they way they need to see it

- The cloud means more data
 - Sensors, events, many data sources
- Data must be easily consumable to be useful
- Data visualization requires UX design







Data

Which way would you like to see equipment?

Equipment Items

Choose columns to show

ItemNumber	Description	Attribute	InvoicePrice	Ordered	Shipped	Received						
IHW4350	Wireless Meter 105A'	Tempered glass	8.23	52	50	50						
IHW2064	Water Heater X05	Tempered glass	18.88	51	51	51						
IHW3282	Outside Propane Grill S72A	Plastic PVC	25.21	69	67	67						
IHW4069	Home Generator U9102	Glass	36.14	10	9	9						
IHW4583	Electrical node	Brushed Aluminum	27.03	49	48	48						
IHW7996	Rheem Gas Range 8299	em Gas Range 8299 Rubber 24.78		60	60	60						
IHW3384	Propane Tank 250gal	Glass	18.61	23	22	22						
IHW6757	R221H First Stage Regulator	Plastic PVC	29.43	63	62	62						
IHW1042	AgriDry Jet Nozzle	Brushed Aluminum	24.05	32	30	30						
IHW4548	Tank Coupling Type J	Vibram	19.29	22	22	22						
<	·	<										

Or do you prefer this?

COSTONER HOI	B / COSTOMER SEARCI	ABCCOM	
ABC Co c.o.d.	mpany · _{Авссо}	M · 40	
Billing Add 79429 3701 Olivia, MN	th St	& Contacts (320)231-3847 · Paul (320)231-3411 · Marge	
SUMMARY	۹ Equipment	t	
ORDERS FINANCIALS CONTRACTS HISTORY CUSTOM EQUIPMENT	0124686 Description Rheem Type APPL	RHE50 Install Date 6/20/2017 Location 1 Owner Company Lease Amount Next Bill No next bill date set	O13527 Description Type TANK
REMINDERS CHECKLIST	2340239 Description R122H I Type REG	First-Stage Regulator Install Date 7/31/2017 Location 1 Owner Company Lease Amount Next Bill No next bill date set	2634234 Description R222 Serie Type REG

« CUSTOMER HUB / CUSTOMER SEARCH / ABCCOM

Customer interactions visualization example



Status visualization example

Cow is alive



Cow is dead



Better search experience

Search Contacts	
Filter: Sort by None	ll groups 🗸 🗸
Hugh Slane	All groups Restrict to:
Lance Brunetti Rand Investments brunlan@Randdemo.com 612-435-9988 San Diego	b 10 5 Months
Ted Wertman Cyberdyne Systems wertted@Cyberdynedemo.com San Diego	88 Months
Noreen Greenbaum Traxis Towers greenor@Traxisdemo.com 612-435-9988 San Diego	14 Days
Darcy Sobieski Stark Industries sobidar@Starkdemo.com 612-435-9988 San Diego	2 _{Years}
Olive Yew Caratid Fluids	2 ~



Better app navigation Good navigation starts with focus on most needed actions and information

- Typical page/view has four to six pieces of information the user needs most
- Typical page/view has two to three actions the user needs most

• Find these out first – then design the view

Good interaction works for typical user

RURAL GAS COMPAN	Y		C
=		Customize	
९ Search menu	Franklin	Account Status	Category Quantities
🟠 НОМЕ			5/1/2017
CUSTOMER HUB		■1 Active	
\$ SALES-CASH RECEIPTS	$\bigcirc +$	■6 C.O.D. ■8 Legal	250
DELIVERY & SERVICE		■9 Inactive	200
- FUEL	heavy intensity rain		150
ACCOUNTS PAYABLE	H: 64" L: 49" Wind: 6mph Friday light rain		Previous Year Current Date
GENERAL LEDGER	→		50
	Wind: 2mph	Contracted Units	
品 FIXED ASSETS	Saturday light rain	Total Units Contracted 23,200.00	0 Sala
PAYROLL	65° H: 65° L: 47° Wind: 5mph		
		■Remaining ■Used	Category Sales
尊 SETTINGS	Top 10 Overdue Customers		5/1/2017 15 5/4/2017 15
	MARSPE · Marketing Specialties Over 120 · \$2,205.62		250
	THOBRO · Thomas Brothers Over 120 · \$1,516.11		200
	WESJAC · Jack & Donna Weston Over 120 · \$325.08	Customer Gain Loss Legal (Past 30 Days)	■ Previous Year
	YAEKEV · Kevin Yaeger Over 120 · \$240.02		100 Current Date
	ABCCOM · ABC Company Over 120 · \$161.82	Cain 0	50 —
	HENJOH · John Hening	Loss 0	, ter
	Over 120 · \$119.85	Legal 0	
	DOEJOH · John & Jane Doe Over 120 · \$80.08		
A USER	MARKEN MARKANING		

UX design foundation: principles of design

- Design principles come from the way the human brain and visual system work
- If you work against the principles, users will work too hard and make mistakes more often
- If you work with the principles, users will see things faster and make fewer mistakes

Indoor Sports	Wood Court Sports	Bat and Ball Sports	BigSports	Basepath Sports	Basepath Sports	NatSports
Volleyball standard	Basketball - high school	Baseball - practice grade	Pro grade football	Baseball - standard	Baseball for league play	Middle school football
Ś			(**)			(**)
White, standard pressure	Dimpled, orange	Leather, blue poly stitching, standard size	Pigskin leather, professional grade size	Cowskin leather, professional size, red	Leather, poly stitching, standard size	Slightly smaller football for middle school play
\$17.95 In stock: 22	\$22.95 In stock: -7	\$7.95 In stock: 5	and surface \$45.95 In stock: 5	<i>stitching</i> \$19.95 In stock: 24	\$19.95 In stock: 5	\$39.95 In stock: -9
Discount Athletics	Bouncy Sports	Bouncy Sports	Grassy Sports	Gridiron Sports	Concrete outdoors	Discount Athletics
Basketball	Basketball	Tennis balls	Tennis balls	League style football	Tennis balls	Soccer ball
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Dimpled, orange	Dimpled, orange, stress resistant	Orange, high bounce	Florescent green, 3 per package	Dimpled leather, regulation size, padded	Standard green, cannister of 3	White standard
\$12.95 In stock: 19	\$16.95 In stock: 4	\$13.95 In stock: 7	\$14.95 In stock: 19	lining \$49.95 In stock: 9	\$14.95 In stock: 19	\$11.95 In stock: 29
Discount Athletics	FarGrass Sports	Knockoff Sports	GreenGrass Outdoo	OnTheField Sports	HardCourt Sports	Indoor Sports
Basketball	Soccer ball standard	Basketball	Soccer ball for winter	Soccer ball standard	Practice volleyball	Basketball - college grad
					Ś	
Dimpled, orange	Off white leather	Dimpled, orange	Orange leather, thick covering	White leather reinforced	White with green stripe	Dimpled, blue and white
\$12.95 In stock: 19	\$21.95 In stock: -17	\$12.95 In stock: 26	\$21.95 In stock: -6	\$28.95 In stock: 12	\$7.95 In stock: 42	\$27.95 In stock: 35

Indoor Sports	Wood Court Sports	Bat and Ball Sports	BigSports	Basepath Sports	Basepath Sports	NatSports	
Volleyball standard	Basketball - high school	Baseball - practice grade	Pro grade football	Baseball - standard	Baseball for league play	Middle school football	
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Basepath Sports	Basepath Sports	BigSports	NatSports	Gridiron Sports	OnTheField Sports
Baseball - standard	Baseball for league play	Pro grade football	Middle school football	League style football	Soccer ball standard
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Cowskin leather, professional size, red stitching	Leather, poly stitching, standard size	Pigskin leather, professional grade size and surface	Slightly smaller football for middle school play	Dimpled leather, regulation size, padded lining	White leather reinforced
<u> </u>	\$19.95 In stock: 5	\$45.95 In stock: 5	\$39.95 In stock: -9	\$49.95 In stock: 9	\$28.95 In stock: 12
Discount Athletics	FarGrass Sports	Indoor Sports	Wood Court Sports	Discount Athletics	Bouncy Sports
Soccer ball	Soccer ball standard	Basketball - college grad	Basketball - high school	Basketball	Basketball
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White standard	Off white leather	Dimpled, blue and white	Dimpled, orange	Dimpled, orange	Dimpled, orange, stress resistant
\$11.95 In stock: 29	\$21.95 In stock: -17	\$27.95 In stock: 35	\$22.95 In stock: -7	\$12.95 In stock: 19	\$16.95 In stock: 4
Discount Athletics	Grassy Sports	Bouncy Sports	Concrete outdoors	HardCourt Sports	Indoor Sports
Basketball	Tennis balls	Tennis balls	Tennis balls	Practice volleyball	Volleyball standard
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Dimpled, orange	Florescent green, 3 per package	Orange, high bounce	Standard green, cannister of 3	White with green stripe	White, standard pressure
\$12.95 In stock: 19	\$14.95 In stock: 19	\$13.95 In stock: 7	\$14.95 In stock: 19	\$7.95 In stock: 42	\$17.95 In stock: 22
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Indoor Sports	Wood Court Sports	Bat and Ball Sports	BigSports	Basepath Sports	Basepath Sports	NatSports	
Volleyball standard	Basketball - high school	Baseball - practice grade	Pro grade football	Baseball - standard	Baseball for league play	Middle school football	
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White, standard press	re Dimpled, orange	Leather, blue poly stitching, standard size	Pigskin leather, professional grade size and surface	Cowskin leather, professional size, red stitching	Leather, poly stitching, standard size	Slightly smaller football for middle school play	
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Discount Athletics	Bouncy Sports	Bouncy Sports	Grassy Sports	Gridiron Sports	Concrete outdoors	Discount Athletics	
Basketball	Basketball	Tennis balls	Tennis balls	League style football	Tennis balls	Soccer ball	
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Dimpled, orange	Dimpled, orange, stress resistant	Orange, high bounce	Florescent green, 3 per package	Dimpled leather, regulation size, padded linina	Standard green, cannister of 3	White standard	
\$12.95 In stock:	19 \$16.95 In stock: 4	\$13.95 In stock: 7	\$14.95 In stock: 19	\$49.95 In stock: 9	\$14.95 In stock: 19	\$11.95 In stock: 29	
Discount Athletics	FarGrass Sports	Knockoff Sports	GreenGrass Outdoo	OnTheField Sports	HardCourt Sports	Indoor Sports	
Basketball	Soccer ball standard	Basketball	Soccer ball for winter	Soccer ball standard	Practice volleyball	Basketball - college grad	
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Dimpled, orange	Off white leather	Dimpled, orange	Orange leather, thick covering	White leather reinforced	White with green stripe	Bat and Ball Spo	or
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In stock: -6 \$28.95

In stock: 12 \$7.95

In stock: 42

In stock: 26 \$21.95

In stock: -17 \$12.95

\$12.95

In stock: 19

- Our visual system groups by size, shape, color, and proximity
- You've just seen four major Gestalt design principles, plus mapping

Dim							
	Bat and Ball Sports	Basepath Sports	Basepath Sports	BigSports	NatSports	Gridiron Sports	OnTheField Sports
\$27.	Baseball - practice grade	Baseball - standard	Baseball for league play	Pro grade football	Middle school football	League style football	Soccer ball standard
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	Leather, blue poly stitching, standard size	Cowskin leather, professional size, red stitching	Leather, poly stitching, standard size	Pigskin leather, professional grade size and surface	Slightly smaller football for middle school play	Dimpled leather, regulation size, padded lining	White leather reinforced
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	GreenGrass Outdoo	Discount Athletics	FarGrass Sports	Indoor Sports	Wood Court Sports	Discount Athletics	Bouncy Sports
	Soccer ball for winter	Soccer ball	Soccer ball standard	Basketball - college grad	Basketball - high school	Basketball	Basketball
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	Orange leather, thick covering	White standard	Off white leather	Dimpled, blue and white	Dimpled, orange	Dimpled, orange	Dimpled, orange, stress resistant
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	Knockoff Sports	Discount Athletics	Grassy Sports	Bouncy Sports	Concrete outdoors	HardCourt Sports	Indoor Sports
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Rooms 201-223, 225

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Rooms 224, 226-241





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TRELL




Violating Gestalt Proximity unnecessarily leads to errors and confusion



- Hitting a control element by accident because it was too close to what you intended can be rage inducing (along with damaging user productivity by throwing away hard-won work)
- In this case, iconography is awful too

Design principle example

http://bit.ly/TheAwarenessTest

A test

- I will show three slides for a few seconds each
- Each slide will have drawings of common tools you might find around your house or workshop
- Your task: how many slides contain a hammer?













Users mostly see what they *expect* to see

- What users perceive is heavily influenced by what they're looking for
- The visual system simple filters out things not considered relevant to the task at hand

It's not hard to learn design principles

- There are about three dozen that matter the most in software
- Almost all of them make sense as soon as they are explained

Again, users mostly see what they *expect* to see

- What users perceive is heavily influenced by what they're looking for
- Inattentional blindness is one aspect, but there are several others
- Next up: Priming







Framing

- What you expect to see can be set by previous experience
- When you see a kitchen, you expect a stove
- If you go in a kitchen that has no stove, you may still remember seeing one





This illustrates a principle in the Gestalt family called Figure Ground



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Evil by Design

- Subverting these principles to hide what you don't want the user to see
- It's unethical



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Other principles that prime or influence what users expect

- Archetypes
- Familiarity
- Habituation





- or - connect with an access code

For today's workshop exercises, focus on...

- Proximity and grouping
- Uncluttered screens
- Use of color (keep it subtle)
- Use of evocative shapes and graphics
- Layering
 - Example: background icon in translucent color

Data visualization design exercise

• "Sketch an information card for a pet in a veterinary application."

 Start by thinking about the pet information you would most like to see if you were a vet. Keep it down to 5 or 6 data items. Then draw at least two layouts that compose this information into a card for the vet to view. Imagine that it will be shown on a flat screen TV in the vet's work room, where he can easily look up and see it.

Here is one example that I sketched for the pet information card

duna ph. to Procedure to be done Pat problem / condition Is this pet dangerous, 1 aggressive trido Sherlock Holmes Black Lab TTP #7 year Friendly Unit Intestinal Blockage 7 months ago Next Colon Probe Injured East Abrailmen Stavilize Italic? could
The hard part

- Remembering to use the principles is where you'll probably stumble
- Most developers are in a deep, deep rut
- We're always busy

Breaking free of the past is your biggest challenge – by far



But once you do break free of the past, it's permanent.

A common sentiment from my clients who focused on UX design:

"We don't even think about software development the same way as before."

To break out, use a UX design process

- Fairly lightweight
- For a single view, it might only take a day or two
- For a full application replacement, it will probably take two to three weeks with a design team of 3-6 people

Don't design everything in the app up front

- Most used pages/views (about 6-10 usually)
- Overall app navigation
- Search experience
- Useful data visualizations

This sets a design direction and encourages better design for everything added later

A lightweight design process usually does not add cost or time to your overall development effort

- Eliminates false starts
- Reduces iterations with users
- Yields more valuable apps
 - Gets the ROI we talked about earlier

Typical steps in a UX design process

Understanding

- Business needs
- User observation in the field
- Analyzing user observations
- Creating work models
- Listing and prioritizing design tasks

Design

- Visioning
- Storyboarding
- Wireframing / Illustration / paper mock-up
- Interaction prototyping
- Design evaluation

UX should emphasize what the user does a lot

- "Do you *know* what your users do?"
- Survey of users: "What three things do you do in the inquiry screen?"



Image of Edna Mode copyright © Pixar/Disney

User observation and analysis

- Observing users in their typical work environment
- A representative set of users is best
- Record notes and product "observations"
 - These are simple sentences about what you learned
 - Example: "User has trouble searching by phone number"
- Analyze observations to gain overall understanding of needs and priorities
- I have a detailed process for this that I use in my projects

Ideation

- Development of ideas via sketching
- Best to do it in groups of 2-4
- Multiple rounds of sketching, usually to refine ideas

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Look for opportunities to innovate

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Key technique – multiple, competing ideas

- The way to get great ideas for design is to have lots of ideas
- You should find **multiple design approaches** for every design challenge you face
 - At least two three or four even better
 - Doing multiple designs forces you to break with the past and explore new ideas

- My main work is consulting. You can get me and my team for:
 - User interface design and prototyping
 - Development of native, web, and desktop apps
- I personally do onsite training for teams on UX design
- UX design video training on Pluralsight and LinkedIn

Billy Hollis

- I also train on XAML
 - WPF / Windows 10 / Uno Platform
 - Beginning through advanced

billy –at– nextver.com @billyhollis on Twitter www.linkedin.com/in/billy-hollis-next-version

