



Esri International User Conference | San Diego, CA
Technical Workshops | July 14, 2011

Best Practices for App Development: A Case Study of User Centered Design

James Killick, Brenda Wolfe, Sooria Jeyaraman,
David Dodge, Garry Burgess

Intro to Business Analyst Online (BAO)

User Centered Design

How User Centered Design Was Used to
Design & Build BAO



James Killick

Education:

BS Computer Science

Experience:

20 Years Product Management

Mostly Consumer Products

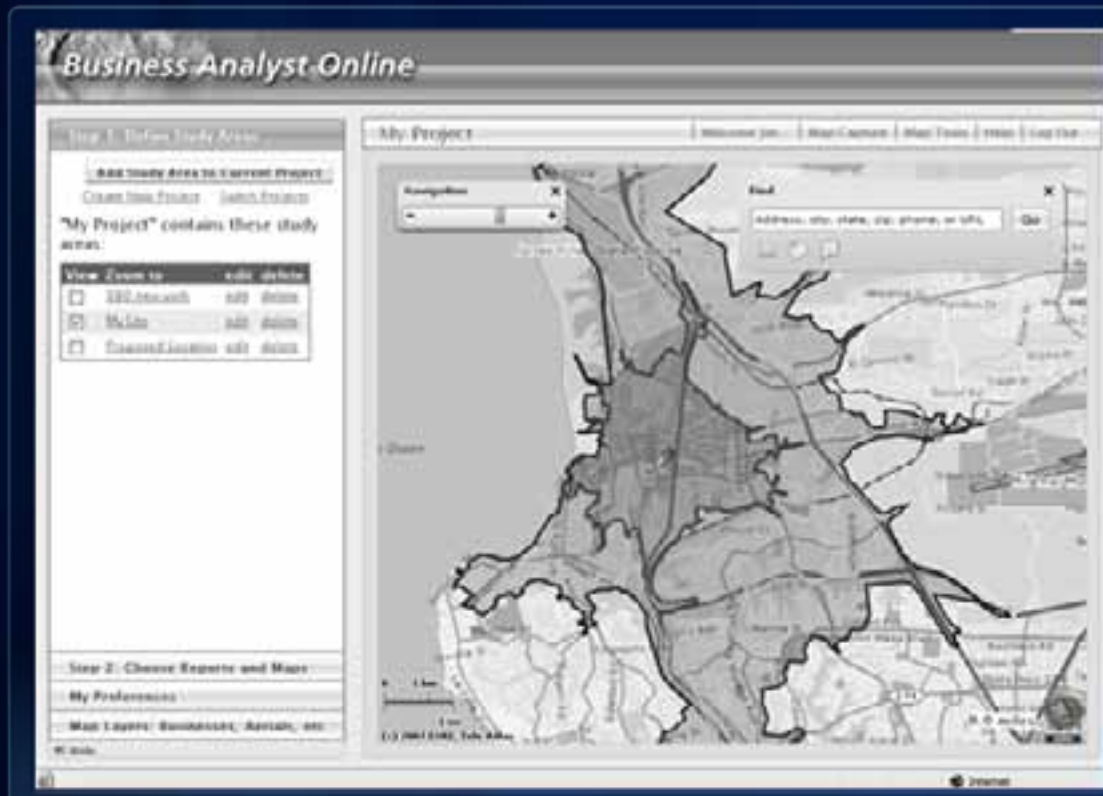
Etak → MapQuest → AOL → Esri

Role:

Product Management

Intro to BAO

The Problem in 2008



Hard to Use

Lots of Support
Calls

Older
Technology
Platform

Home Select Location Get Reports Research Market

Choose One Find Location Draw Polygon Select Geographies Import File

Organize Sites

step 1 of 3
 Click Next to get reports, save this site or create a new site

My Layers My Sites Streets Satellite Topographic



“The new BAO looks fantastic! You guys did a wonderful job and have made my job much easier!”

--Ruth Parish
City of San Bernardino

“... thank you for the stunning overhaul of Business Analyst Online! The system has functionality for all of the things we always dreamed about – and more.”

--Jamey DeOrio
Masterplans.com



Brenda Wolfe

Education:

M.S. Economics & Statistics

Experience:

11 Years Product Management

SAS and Esri

6 Products (Online, Desktop)

Role:

Requirements & User Definition

Demo

So, how did we put it together?

User Centered Design

Innovate



User Centered Design

User
Research



Analyze



Develop



Usability
Testing



Evaluate



UI
Design



Prototype

It's about Research
Understand Your Users

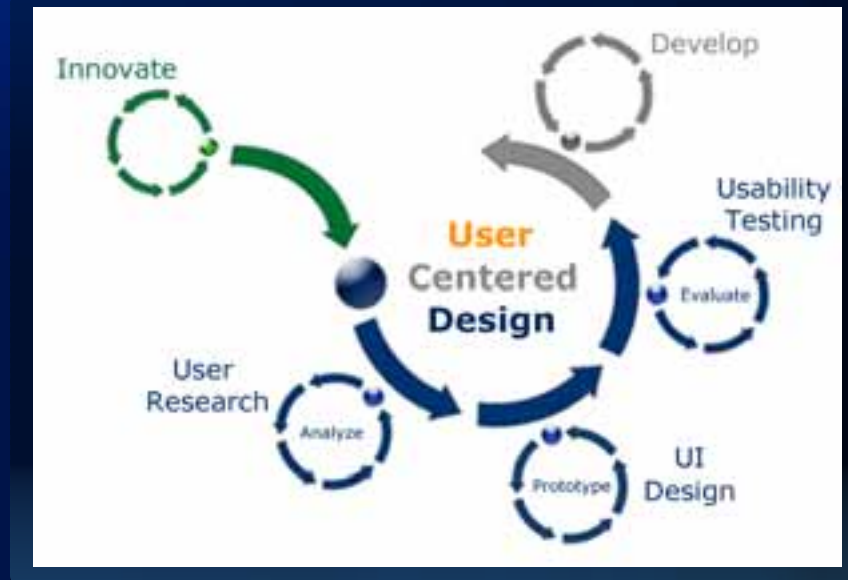
It's about Evaluation
Does it work for Your Users?

It's a Cycle

Iterative, Collaborative, Works Well with Scrum

It Embraces Innovation

While still focusing on user problems





Sooria Jeyaraman

Education:

MS Human Factors Engineering

Experience:

6 years in the field

Lexmark and Esri

Role:

User Experience Architect

Usability

What is Usability?

Easy to Learn

Efficient to Use

Easy to Memorize

Fewer User Errors

High User Satisfaction

Usability is the ease of use...

User Centered Design is the means to achieve usability

User Centered Design

It is a philosophy and a process.

It is a philosophy that places the person (as opposed to the 'thing') at the center

It is a process that focuses on cognitive factors (such as perception, memory, learning, problem-solving, etc.) as they come into play during user's interactions with applications to achieve high-quality user experiences.

Innovate



User Centered Design

User
Research



Analyze



Develop



Usability
Testing



Evaluate



UI
Design



Prototype



User
Research

Analyze

- Interviews
- Focus Groups
- Ethnographic Research
- Task Analysis
- Surveys
- Contextual Interviews
- Shadowing
- Personas

- Story Boards
- Paper Prototypes
- Wireframes
- Information Architecture
- Card Sorting
- Contextual Inquiry
- Low fidelity Prototypes
- Mock-ups



- Heuristic Evaluation
- Scenarios
- User/Usability Testing



Innovate



User Centered Design

User
Research



Develop



Usability
Testing



UI
Design



User Centered Design helps to improve the usability and usefulness of everything from software to information systems to processes... anything with which people interact.

Quick Examples





WIN THE ULTIMATE ROADTRIP!

We are giving away the **Ultimate Road Trip**
Thanks to the generosity of our sponsors you can win
this fabulous prize pack **worth over \$1500!**

Enter the **FREE DRAW** to win the **Ultimate Road Trip!**

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full of tips, advice, reviews and comps.

SUBMIT ENTRY

Entering this competition is deemed
acceptance of the terms and conditions. [View
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What do I
need to enter
in the text
boxes?

Where do I start?

MOVADO
the art of time



San Ballet Theatre Presents

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Advanced Search

[Advanced Search Tips](#) | [About Google](#)

| | | | |
|---------------|---|--|---|
| Find results | with all of the words with the exact phrase with at least one of the words without the words | <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> | 10 results <input type="button" value="Google Search"/> |
| Language | Return pages written in | <input type="text" value="any language"/> | |
| File Format | <input type="button" value="Only"/> return results of the file format | <input type="text" value="any format"/> | |
| Date | Return web pages updated in the | <input type="text" value="anytime"/> | |
| Numeric Range | Return web pages containing numbers between | <input type="text"/> and <input type="text"/> | |
| Occurrences | Return results where my terms occur | <input type="text" value="anywhere in the page"/> | |
| Domain | <input type="button" value="Only"/> return results from the site or domain | <input type="text" value="e.g. google.com, .org. More info"/> | |
| Usage Rights | Return results that are | <input type="text" value="not filtered by license"/> | |
| SafeSearch | <input checked="" type="radio"/> No filtering <input type="radio"/> Filter using SafeSearch | <input type="text" value="More info"/> | |

Page-Specific Search

| | | | |
|---------|----------------------------------|--|---------------------------------------|
| Similar | Find pages similar to the page | <input type="text" value="e.g. www.google.com/help.html"/> | <input type="button" value="Search"/> |
| Links | Find pages that link to the page | <input type="text"/> | <input type="button" value="Search"/> |

Simplify



Advanced Search

[Advanced Search Tips](#) | [About Google](#)

Use the form below and your advanced search will appear here

Find web pages that have...

all these words:

this exact wording or phrase:

one or more of these words: OR OR

But don't show pages that have...

any of these unwanted words:

Need more tools?

Results per page:

Language:

File type:

Search within a site or domain:

(e.g. youtube.com, .edu)

[Data](#), [usage rights](#), [numeric range](#), and [more](#)



[Advanced search](#)
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Google Search

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UI is also about words...



A network error has occurred

This computer's Internet connection appears to be online. (-66559)

Network Diagnostics

OK

How User Centered Design Was Used to Build BAO

Innovate



User Centered Design

User
Research



Develop



Usability
Testing



UI
Design





Rule #1:

Know your user.*



“Perfect companion for my USB toaster. I'll wait for the knife sharpener/external hard drive, the tomato slicer keyboard, and the Mr. Coffee GPS”



iPhone 4: Antennagate



BAO Initial Interviews

Did 20 interviews before
any design or development
started



Probe for...

Background

Goals

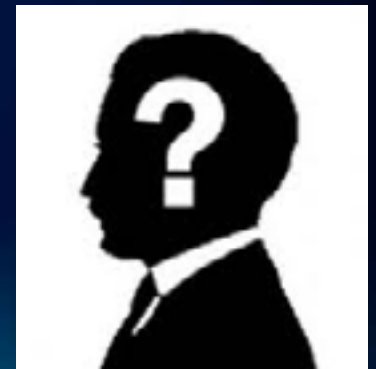
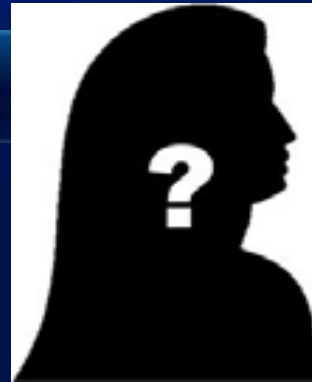
Workflows

Data & software used

Final products

Environment

Frustrations and **pain**



The Persona

Persona Example

- Graphic Designers
- Stylish. Technical. Artists.
- Mac and Adobe Users
- Generally younger
- They are all about visual presentation.
- Want small icons/tools.



Persona Example

- Always busy, often interrupted
- Money-motivated—don't learn for the fun of it
- *Slightly* older 😊
- Not computer savvy
- See themselves as very individual
- Strive to be seen as knowledgeable, credible



BAO Personas

BAO Persona (co-Primary)

Larry Landhawk
CCIM, Real Estate Professional



Larry has a bachelor's degree in Business Management. He has been in the real estate profession for more than 25 years. He has his own small business with ten other brokers. He is active on several community boards and organizations. For Larry, real estate is all about who you know, so being involved in many organizations helps him network with others. Larry is not at all shy—you can't be shy in his business. And he's not big on political correctness for that matter.

According to Larry, you have to have connections, but you also need to prove yourself. Software tools such as BAO and Google help make him look good and help him to make his case to his clients and to finance professionals. Sometimes Larry will actually run analysis reports in front of the customer. When the software throws an error in front of the customer, Larry loses credibility.

Larry is in the business of helping retail chains find branch locations and/or

investments. He has a high school diploma and a college degree. He is

BAO Personas

BAO Persona (Co-Primary)

Peggy Printsalot **Executive Administrative Assistant**



Peggy has an associate's degree in an unrelated field from a regional Community College. She came to work for Larry Landhawk's company 12 years ago. She has some background in sales and customer service, which is why Larry thought she was a good person to hire for the office all those years ago. She has an outgoing bubbly personality and doesn't mind fielding all of the phone calls the company gets. She works with one other administrative assistant in the office, and together they support a staff of eleven agents.

Peggy is not a software expert. She uses Microsoft Office products to keep the office running, but otherwise is not interested in software for fun. In her down time, Peggy is more interested in her two kids—both are in college, and she is quite proud of that. She will readily confess she wouldn't mind becoming a grandmother, but is trying hard not to pressure her kids about it.

Peggy works 40 hours per week. At the end of the day she is "off the clock." She goes home and works on some of her personal hobbies in the evening. She has more time now that both kids are out of the house.

Call Reports

Pragmatic Marketing Call Report

Ken Spillberg

RSG

<http://www.webrsg.com/>

9/9/09

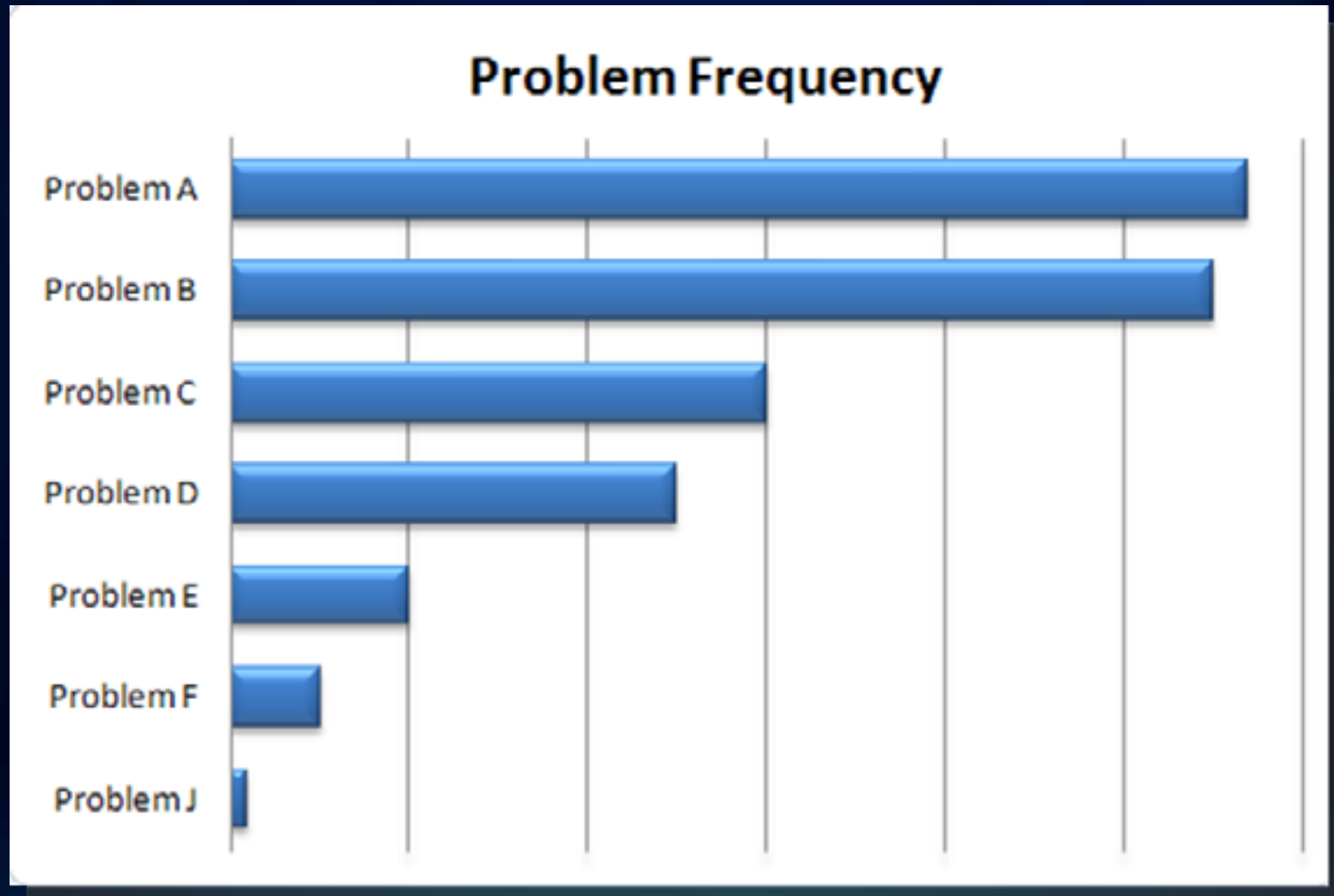
Background

RSG advises local governments on development issues.

When researching neighborhoods, they actually go out into the neighborhoods and do a field survey. They look at the buildings and interview people on the street. Many of the neighborhoods they go to are not the best and they always go in pairs.

They examine both commercial and residential properties. They look at trends in the community. They look developers' plans on behalf of local governments to assess if the plan would be successful. They are a neutral expert on behalf of the city.

Problem Statements



BAO Area or Site Search “Problems”

“Show me areas near public train stations where educated people are employed and have housing over \$300,000.”

“I like this location, find me something demographically like it.”

“I want to enter demographics that are key, and for the application to find high concentrations of those demographics.”

Feeds the Requirements

“The system shall...”

“The user shall...”

Does not get into “How”

Feeds the Requirements

“Larry shall be able to select multiple criteria by which he can filter the map”

Does not get into “How”

Product Requirements Document

Bringing it all together

Context

Requirements

REQUIREMENT GROUP # 8- SELECT AREA BY CRITERIA ("SMART MAP")

Market evidence: 5 Times Impact: 5 Equals priority: 25

Persona Goal: Save time and provide superior service relative to other real estate consultants/brokers.

8. PROBLEM: Larry can't display multiple site criteria on the map in order to whittle down areas for site evaluation.

8.1 USE SCENARIO: Larry is looking to purchase some retail malls that he will later lease out to tenants. He wishes to filter the map to show which areas meet his criteria and to show which locations are located in areas with characteristics that will also make the malls appealing to tenants.

8.1.1 REQUIREMENT: Larry shall be able to select multiple criteria (variables) by which he wishes to filter the map.

8.1.2 REQUIREMENT: Larry shall be able to specify the desired value ranges of each variable.

8.1.3 REQUIREMENT: The system shall display and highlight areas of the map that meet multiple selection criteria.

8.1.4 REQUIREMENT: Larry shall be able to probe the map to see the exact values of the variables he is interested in.

Product Requirements Document

Bringing it all together

Requirement Group Name



REQUIREMENT GROUP # 8- SELECT AREA BY CRITERIA ("SMART MAP")

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Product Requirements Document

Bringing it all together

Problem
Frequency &
Impact



REQUIREMENT GROUP # 8- SELECT AREA BY CRITERIA ("SMART MAP")

| | | | | | |
|-----------------|---|--------------|---|-----------------|----|
| Market evidence | 5 | Times impact | 5 | Equals priority | 25 |
|-----------------|---|--------------|---|-----------------|----|

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Product Requirements Document

Bringing it all together

Persona Goal



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Product Requirements Document

Bringing it all together

Problem



REQUIREMENT GROUP # 8- SELECT AREA BY CRITERIA ("SMART MAP")

Market evidence 5 Times impact 5 Equals priority 25

Persona Goal: Save time and provide superior service relative to other real estate consultants/brokers.

B. PROBLEM: Larry can't display multiple site criteria on the map in order to whittle down areas for site evaluation.

B.1 USE SCENARIO: Larry is looking to purchase some retail malls that he will later lease out to tenants. He wishes to filter the map to show which areas meet his criteria and to show which locations are located in areas with characteristics that will also make the malls appealing to tenants.

B.1.1 REQUIREMENT: Larry shall be able to select multiple criteria (variables) by which he wishes to filter the map.

B.1.2 REQUIREMENT: Larry shall be able to specify the desired value ranges of each variable.

B.1.3 REQUIREMENT: The system shall display and highlight areas of the map that meet multiple selection criteria.

B.1.4 REQUIREMENT: Larry shall be able to probe the map to see the exact values of the variables he is interested in.

Product Requirements Document

Bringing it all together

Use Scenario



REQUIREMENT GROUP # 8- SELECT AREA BY CRITERIA ("SMART MAP")

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Product Requirements Document

Bringing it all together

Requirements



REQUIREMENT GROUP # 8- SELECT AREA BY CRITERIA ("SMART MAP")

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Product Requirements Document

Bringing it all together

Summary
Table

Easy to View
and Rank

| User Interface Requirements | | | | | |
|-----------------------------|---|-----------|--------|--------------------------|--------------------------|
| REQ Group | Requirement | Source | Weight | Product Initiative | Tentative Target Release |
| | Rename application to "ESRI Business Analyst Online" | Internal | 999 | | November |
| RG 1 | Two levels of variable tree in Color-Coded Maps and Create Comparison Reports | Internal | 999 | Improved User Efficiency | November |
| RG 2 | Incorporate New End User License Agreement (EULA) | Internal | 999 | Improved User Efficiency | November |
| RG 4 | Quick on-screen comparison reporting | Customers | 54 | Improved User Efficiency | November |
| RG 5 | Display sites over thematic maps | Customers | 50 | Improved User Efficiency | November |
| RG 6 | Display thematic and point layers when creating sties | Customers | 30 | Improved User Efficiency | November |
| RG 7 | Control the order of reports in the all-in- | Customers | 28 | Improved User Efficiency | November |

Deliverables from the Process

- Call reports
- Problem statements
- Requirements
- Use scenarios
- Personas

Rule #2:

If it's not usable, it doesn't exist.

Innovate



User Centered Design

User
Research



Analyze



Develop



Usability
Testing



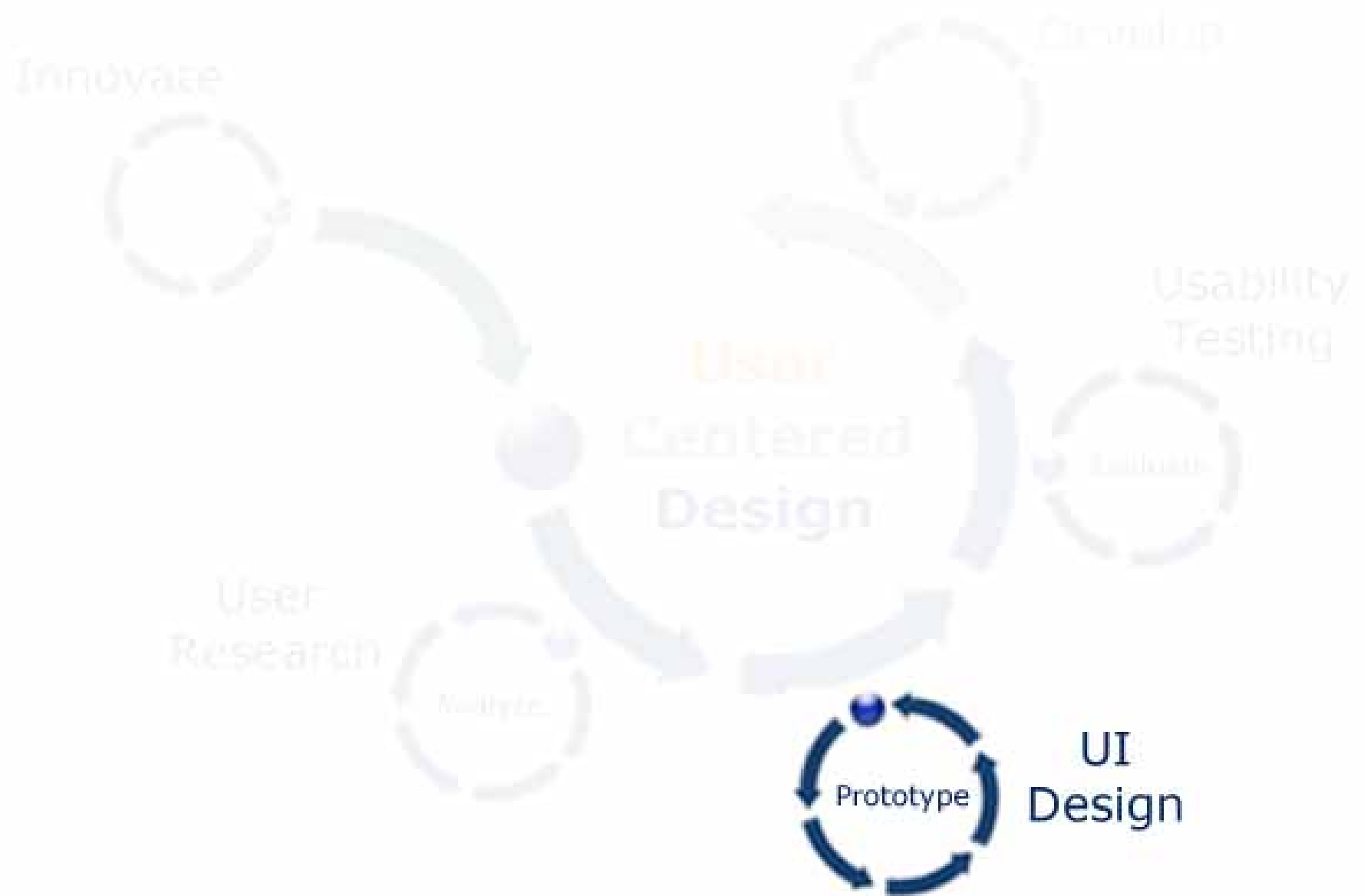
Evaluate



UI
Design

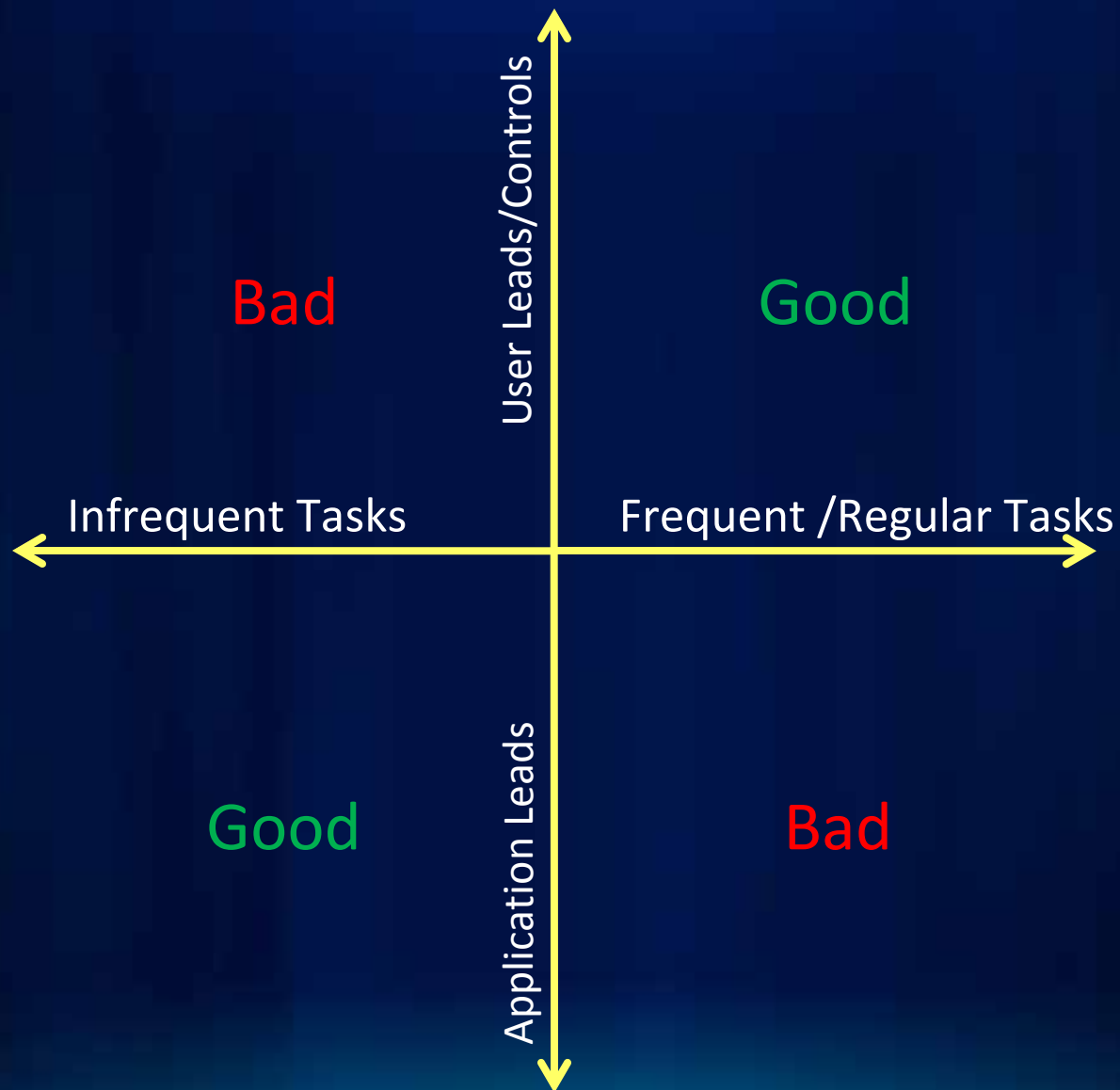


Prototype



Interaction Design

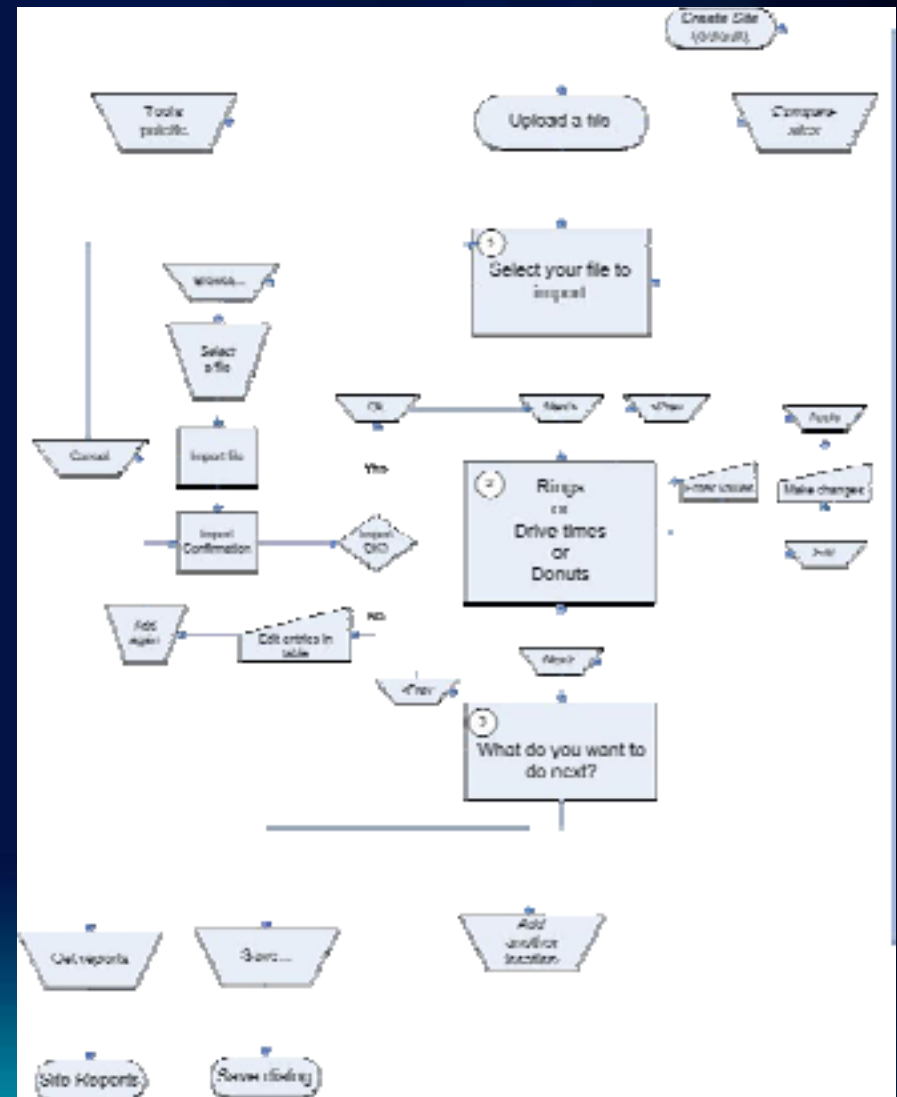




- Knowledge in the head
- Knowledge in the world
- Affordances
- Progressive Disclosure

Information Architecture

- Shows task flow in the app
- Helpful to do this before designing screens



Paper Prototypes

BAO Welcome Screen Report | Register | Logout

Enter an Address

Draw on Map

Import a file

Search for geography

Name:

Address:

City/zip:

lat:

☒ Big ☐ Small ☐ Medium

☐ Draw ☐ Search

Add another location

Reports for: at

| Report Title | Date | Format | Email |
|--------------|------|--------|-------|
| Demographics | — | PDF | |
| MM Income | 35 | HTML | |
| Age group | 150 | PDF | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Complete history Report Compare Location Run Report

BAO

Username

PW

☐ Remember me on this computer

Login

New User: Register

Order #:

Email:

Pickup

About Location

About Variables / Reports

Welcome BWRP

BAO Welcome Screen Register | Logout

What: and for whom: Go

eg: income, budget eg: Los Angeles, 2000

Preview Reports

Subscription: Basic

Change

Welcome BWRP

Wireframes

Search Results

Search Results for "Pizza" (47 out of 1000 results shown) [Show 7 Maps](#)

| <input checked="" type="checkbox"/> | Business | Address | City | Sta. | ZIP | Sales | NAICS | SIC |
|-------------------------------------|-----------|------------------|-------|------|-------|----------|--------|------|
| <input checked="" type="checkbox"/> | Pizza Hut | 47 Gulien Ave | San | CA | 92126 | \$124 | 722112 | 5812 |
| <input checked="" type="checkbox"/> | Pizza Hut | 145 Little | Selma | CA | 92126 | \$141 | 722112 | 5812 |
| <input checked="" type="checkbox"/> | Pizza Hut | 65 Villa Lajolla | Poway | CA | 92126 | \$74 000 | 722112 | 5812 |
| <input checked="" type="checkbox"/> | Pizza Hut | 30 Nobel | Selma | CA | 92126 | \$37 000 | 722112 | 5812 |
| <input checked="" type="checkbox"/> | Pizza Hut | 47 Gulien Ave | San | CA | 92126 | \$124 | 722112 | 5812 |
| <input checked="" type="checkbox"/> | Pizza Hut | 145 Little | Selma | CA | 92126 | \$141 | 722112 | 5812 |
| <input checked="" type="checkbox"/> | Pizza Hut | 65 Villa Lajolla | Poway | CA | 92126 | \$74 000 | 722112 | 5812 |
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| <input checked="" type="checkbox"/> | Pizza Hut | 145 Little | Selma | CA | 92126 | \$141 | 722112 | 5812 |

Save results as a layer: Pick a Symbol:

[Export to Excel](#) [Add Selected Locations](#) [Cancel](#)

Advanced Search Options

Default Search:

Search Area:

Keywords:

☐ Exact Match ☒ Search for Company name only

NAICS Code: [NAICS code directory](#)

SIC Code: [SIC code directory](#)

Sales Volume: to

of Employees: to

Search Limit:

[Search](#) [Cancel](#)

Analyst Online

Welcome, Steve | [Logout](#)

[My Account](#) | [Preferences](#) | [Help](#) | [Support](#)

[Home](#) [Get Reports](#) [Research Market](#)

[Create Color Coded Map](#) [Import Locations](#) [Business Search](#)

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[Infogroup search](#)

[Bing business search](#)

Visual and Motion Design



David Dodge

Education:

B.A. Dartmouth

Experience:

15+ Years Design

Rapideye Media

Saatchi and Saatchi / Toyota

Role:

Visual & Motion Design

Not just pretty pictures



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[Select Location](#)

[Get Reports](#)

[Research Market](#)

Share



1



Select Your Location

Apply trade areas and compare sites.

2



Get Your Reports

Get reports for your area of interest.

3



Research Market

Explore new markets by mapping demographics, spending and more.

[Get Started](#)

Have you tried...?

New Data for Comparison Reports and Smart Map Search

Market Potential, Consumer Spending, and Retail Marketplace Data are now available in Comparison Reports and Smart Map Search.

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Create an emotional connection

Engage the user



Our User is Business



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Cloud formation

From the fringe to the fast track,
cloud computing drives innovation

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Explore key smarter
industry topics



Skills needed for U.S. to compete

"And business needs to adapt
to the global marketplace"



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Digital Dashboard

from The Wall Street Journal Digital Network

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| DJIA | Nasdaq | S&P 500 |
| 0.20% | 2.21% | 1.80% |
| Global Dow | FTSE100 | Nikkei |
| 32 % | 63 % | |

Decliners & Advancers*

Treasury Bonds:

| | | |
|---------|---------|---------|
| 0.003 | 0.01 | 0 |
| 3 month | 6 month | 2 year |
| -0.01 | -0.017 | -0.015 |
| 5 year | 10 year | 30 year |

Currencies & Gold:

| | | |
|---------|----------|-----------|
| -0.04% | -0.15% | -0.10% |
| GBP | Euro/USD | GBP/USD |
| -0.14% | 0.09% | 0.04% |
| USD/Yen | USD/Can | USD/Swiss |

THE WALL STREET JOURNAL
Digital Network

- WSJ.com
- Marketwatch.com
- Barrons.com
- SmartMoney.com
- AllThingsD.com

- FINS.com
- BigCharts.com
- Virtual Stock Exchange.com

- WSJ U.S. Edition
- WSJ Asia Edition
- WSJ Europe Edition
- WSJ India Page

Foreign Language Editions:

- WSJ Chinese
- WSJ Portuguese
- WSJ Spanish

Intraday Data provided by Thomson Reuters and subject to terms of use. Historical and current end-of-day data provided by Thomson Reuters. Intraday data delayed per exchange requirements. Dow Jones Indexes (SM) from Dow Jones & Company, Inc. All quotes are in local exchange time. Real time last sale data provided by NASDAQ.

Gray and blue say business

Visual design answers our
persona's expectations



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Daniel Ellsberg Calls For Leaks From Amazon

Andy Greenberg

The story leading up to the company's decision to boot WikiLeaks from its hosting services remains unclear.

- Bank Of America Shares Recover From WikiLeaks Assault
- WikiLeaks' Julian Assange Wants To Spill Your Corporate Secrets

Forbes Focus

Obama In Afghanistan On Unannounced Trip
Jobless Rate Rises To 9.8% As Job Growth Slows
Stocks Recover Ground after Weak Jobs Report
SKorean Jets Will Bomb North If It Attacks Again
WikiLeaks Fights To Stay Online Amid Attacks

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Three Myths About North Korea
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NOW PLAYING

Meet Groupon's Founder: The Next Billionaire?

Google in talks to acquire Groupon; Andrew Mason talks about growing the company.



McLaren's Tech-Savvy Sports Car



Complete
Coverage Of
WikiLeaks



2011 Investment
Guide



America's
Biggest
Charities



The World's
Most Powerful
People



The
Gentleman's
Gift Guide

Full List | The Forbes 400



The Billionaires Burned By
WikiLeaks

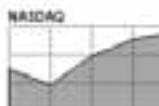
It isn't just heads of state who've had their secrets compromised. Some of the

Markets

Week At A Glance



My Portfolio



Microsoft



Reader Comments

Visual design creates a
Business experience

Desired BAO Experience

Advanced

Accurate

Benchmark

Comprehensive

Easy

Enjoyable

Efficient

Empowering

Fast

Good Value

Insightful

Modern

Powerful

Reliable

Trustworthy

Up-to-date

Desired feelings when you Use BAO ...

You are Agile

You are Adept

You are Expert

You are Confident

You are Decisive

You are Efficient

You are Empowered

You are Intelligent

You are Knowledgeable

You are Self-assured

You are Superior



How does this work in BAO?

Preserve negative space

| File | Orders | New | Report Selection | OCB | SSF View | Dupe Load | View Invest | Routing Sheet | Print Bill | Call Log | Cancel | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|-----------|---------------|------------------|------|------------|-----------|-------------|---------------|------------|----------|--------|------|------|---------------|--------|------|------------|-----|------|------|--------|--------|-------|-------|----|----|----|----------|----|-------|-------|---|------|-----------|--|--|--|--|--|-------|-------|---|-------|-------|-----|--|-------|----------|-------|-------|--------|---|--|--|--|--|--|--|--|------|------|
| 0 | 9900-0234 | 99031927 | Print | View | Print | Edit | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <div> <div> Order Joe Quote 0 Pin XXXXXXXXXX Term R Prepaid C Collect C 3rd Party STD Cust Hi Fo Holdings, Ltd. HFO Inv Hi Fo Holdings, Ltd. HFO At Hi Fo Holdings, Ltd. HFO Add 1125 STREET SUITE 1200 CIPC VANCOUVER BC V6Z2K8 C Ph XXXXXXXXXX Fax XXXXXXXXXX Cont XXXXXXXXXX Est P/L XXXXXXXXXX Appointment D 06-10-02 F T </div> <div> Mode From SC To SC Alt ADT ADT Tariff CANFD-00-01 Service 20 0 194 From YYF AZ To YYZ AL Deliver By 06-12-02 17:00 Clock Stop XXXXXXXXXX DATE 0 0 0 PU Min Del Min 0 0 0 </div> <div> Charges 761.50 Discount 0% SubTotal 761.50 Accessorial 40.00 DV 0 0.00 FSC CAN 2.50% 38.00 Total 839.50 Balance 839.50 </div> </div> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <div> <div> Cgnt CANADIAN HARDWARE & H Add XXXXXXXXXX AVENUE SUITE 101 CIPC SCARBOROUGH ON M1B5M4 C Ph XXXXXXXXXX Fax (416) XXXXXXXX Cont XXXXXXXXXX Est P/L XXXXXXXXXX Appointment D XXXXXXXXXX F T </div> <div> Broker / Custom Agent Broker Value 0.00 USF Marked XXXXXXXXXX Verbal Prod XXXXXXXXXX Notify on FOB XXXXXXXXXX Estimate XXXXXXXXXX </div> <div> Non-Freight XXXXXXXXXX Marked Field XXXXXXXXXX Print Field XXXXXXXXXX Rate </div> </div> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <div> <div> ADD 00.00 0 0 Fee 00.00 Free Collect 0 0 0 </div> <div> SAVED 0 14 4 1 1 </div> </div> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th>Unit</th> <th>Type</th> <th>H Description</th> <th>Stowed</th> <th>CBMT</th> <th>Dimensions</th> <th>25</th> <th>CBMT</th> <th>Est</th> <th>Charge</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>CRATE</td> <td>CRATE</td> <td>91</td> <td>94</td> <td>97</td> <td>25x25x20</td> <td>97</td> <td>50.00</td> <td>40.50</td> </tr> <tr> <td>1</td> <td>2MAN</td> <td>2 MAN P/L</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>40.00</td> <td>40.00</td> </tr> <tr> <td>2</td> <td>CRATE</td> <td>CRATE</td> <td>500</td> <td></td> <td>1,426</td> <td>60x40x43</td> <td>1,426</td> <td>50.00</td> <td>713.00</td> </tr> <tr> <td>0</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0.00</td> <td>0.00</td> </tr> </tbody> </table> | | | | | | | | | | | | Unit | Type | H Description | Stowed | CBMT | Dimensions | 25 | CBMT | Est | Charge | 1 | CRATE | CRATE | 91 | 94 | 97 | 25x25x20 | 97 | 50.00 | 40.50 | 1 | 2MAN | 2 MAN P/L | | | | | | 40.00 | 40.00 | 2 | CRATE | CRATE | 500 | | 1,426 | 60x40x43 | 1,426 | 50.00 | 713.00 | 0 | | | | | | | | 0.00 | 0.00 |
| Unit | Type | H Description | Stowed | CBMT | Dimensions | 25 | CBMT | Est | Charge | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | CRATE | CRATE | 91 | 94 | 97 | 25x25x20 | 97 | 50.00 | 40.50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 2MAN | 2 MAN P/L | | | | | | 40.00 | 40.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | CRATE | CRATE | 500 | | 1,426 | 60x40x43 | 1,426 | 50.00 | 713.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | | | | | | | | 0.00 | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <tbody> <tr> <td>3</td> <td>Accs</td> <td>540.00</td> <td>DV</td> <td>0</td> <td>50.00</td> <td>591</td> <td>944</td> <td>1321</td> <td>1,5234</td> <td>761.50</td> </tr> </tbody> </table> | | | | | | | | | | | | 3 | Accs | 540.00 | DV | 0 | 50.00 | 591 | 944 | 1321 | 1,5234 | 761.50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Accs | 540.00 | DV | 0 | 50.00 | 591 | 944 | 1321 | 1,5234 | 761.50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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Import Locations

Business Search

Business name, SIC, or NAICS code

Advanced options

Utilities/Fuel/Public Services: Total by States

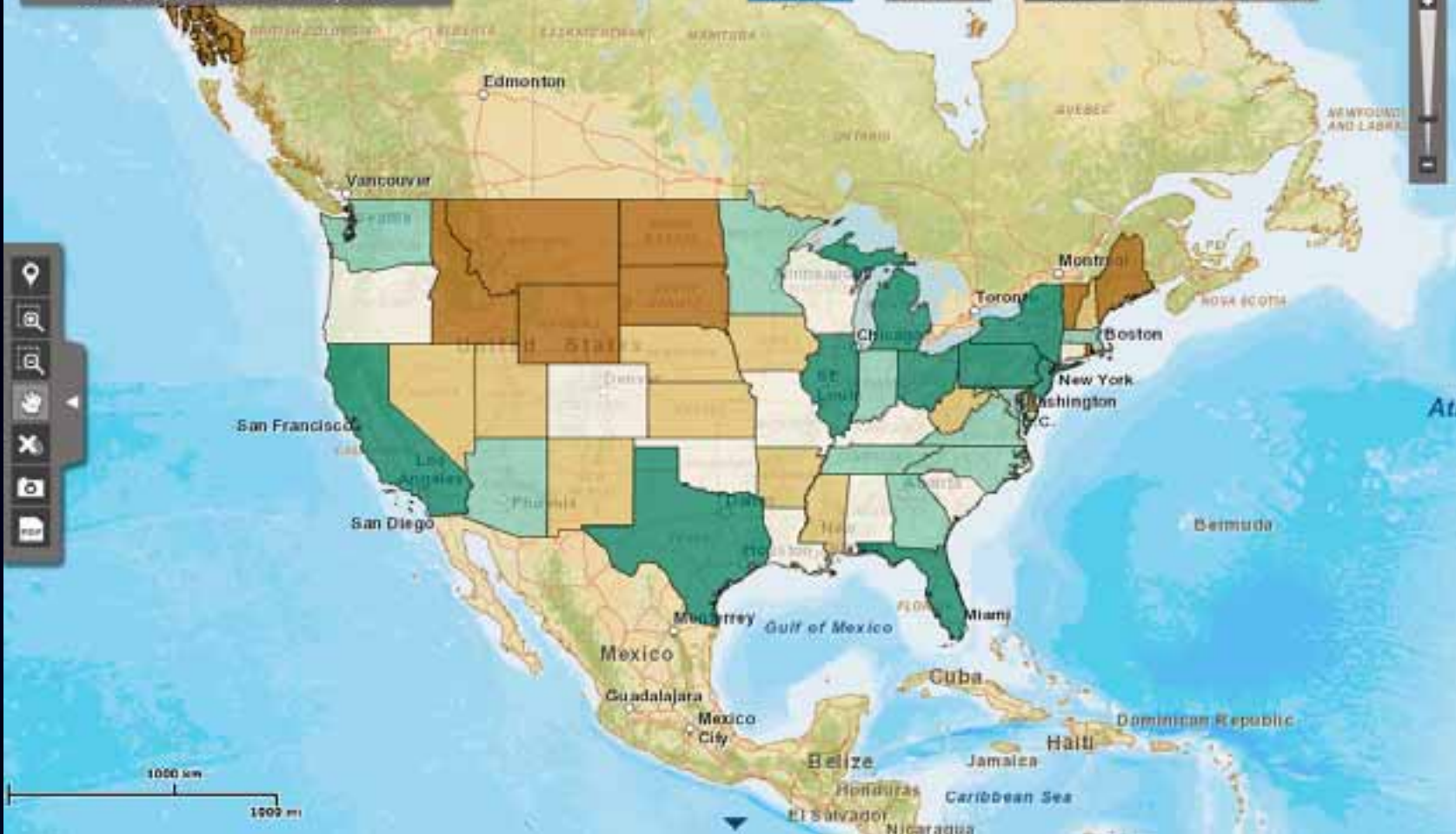
My Layers

My Sites

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More Maps



So the map and results
remain primary

Blue Leads You

- Defines workflow menu
- Highlights the next step in the workflow
- Is the color of results... Smart Map Search



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Prev

Click the polygon button to draw your area on the map. If needed, adjust map view below.

Narrow location

Go



Clear Last

Edit

step 1 of 2

Click Next to get reports, save this site or create a new site.

Next

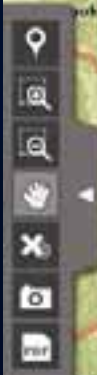
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Business name, SIC, or NAICS code



advanced options

Smart Map Search by States

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Motion not just about
“flashiness”

Keep it subtle

Don't overwhelm

Communicates
what will happen and
what just happened

Orients the user in the UI

[Home](#)[Select Location](#)[Get Reports](#)[Research Market](#)[Choose One >>](#)[Run Standard Reports](#)[Create Comparison Reports](#)[Previous Reports](#)

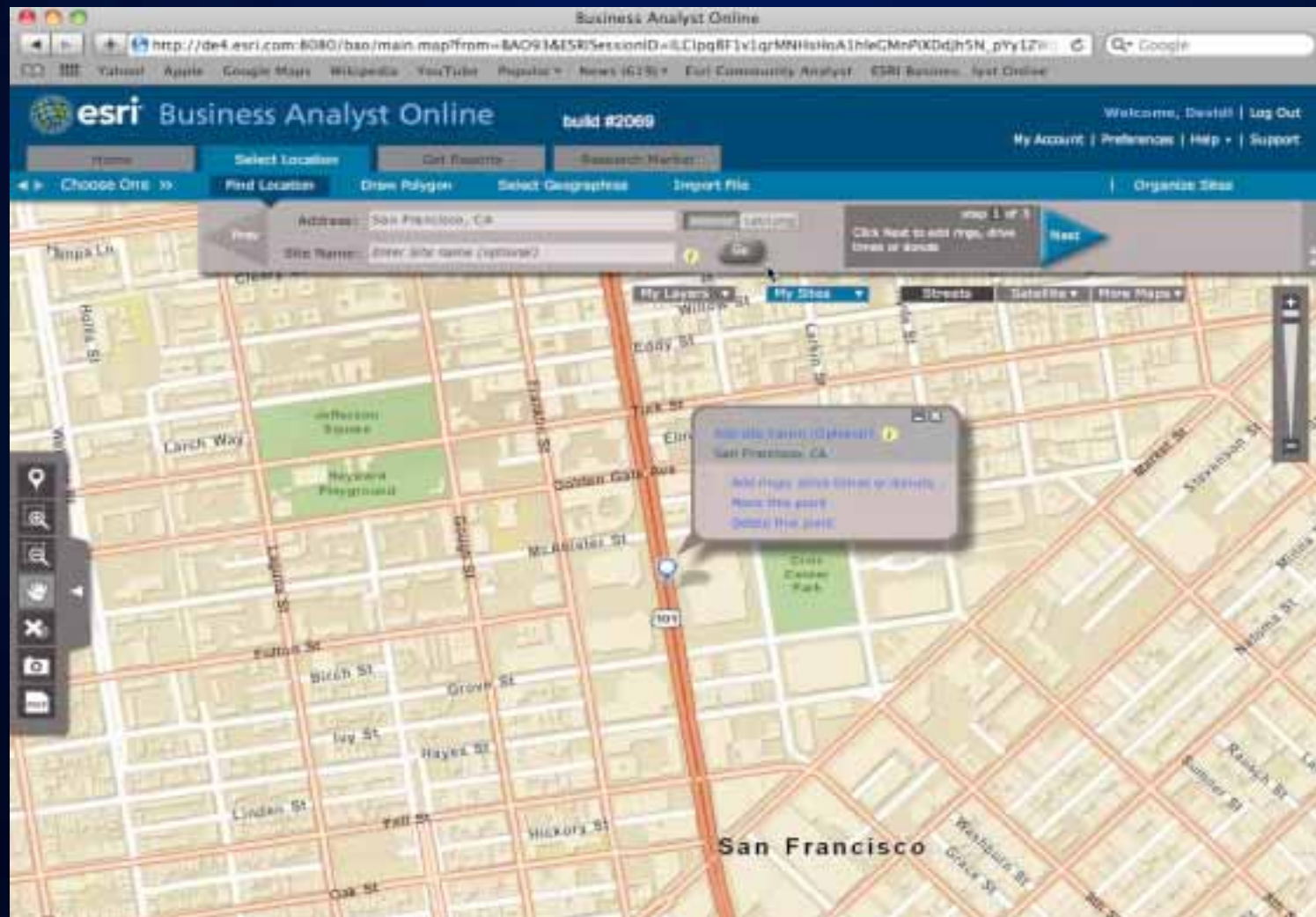
Selected Sites: 1

[Send To](#) | [New](#)☐ 80125 (LITTLETON), CO☒ New York, NY☐ Cincinnati, OH☐ Boulder, CO☐ 80125 (LITTLETON), CO
1, 3, 5 miles☐ New York, NY
1, 3, 5 miles☐ Cincinnati, OH
1, 3, 5 miles☐ Boulder, CO
1, 3, 5 miles[Run
Favorites](#)[Add New
Location](#)View: [All Reports](#)Sort by: [Report Name](#) | [Popularity](#) | [Price](#) | [Favorites](#)

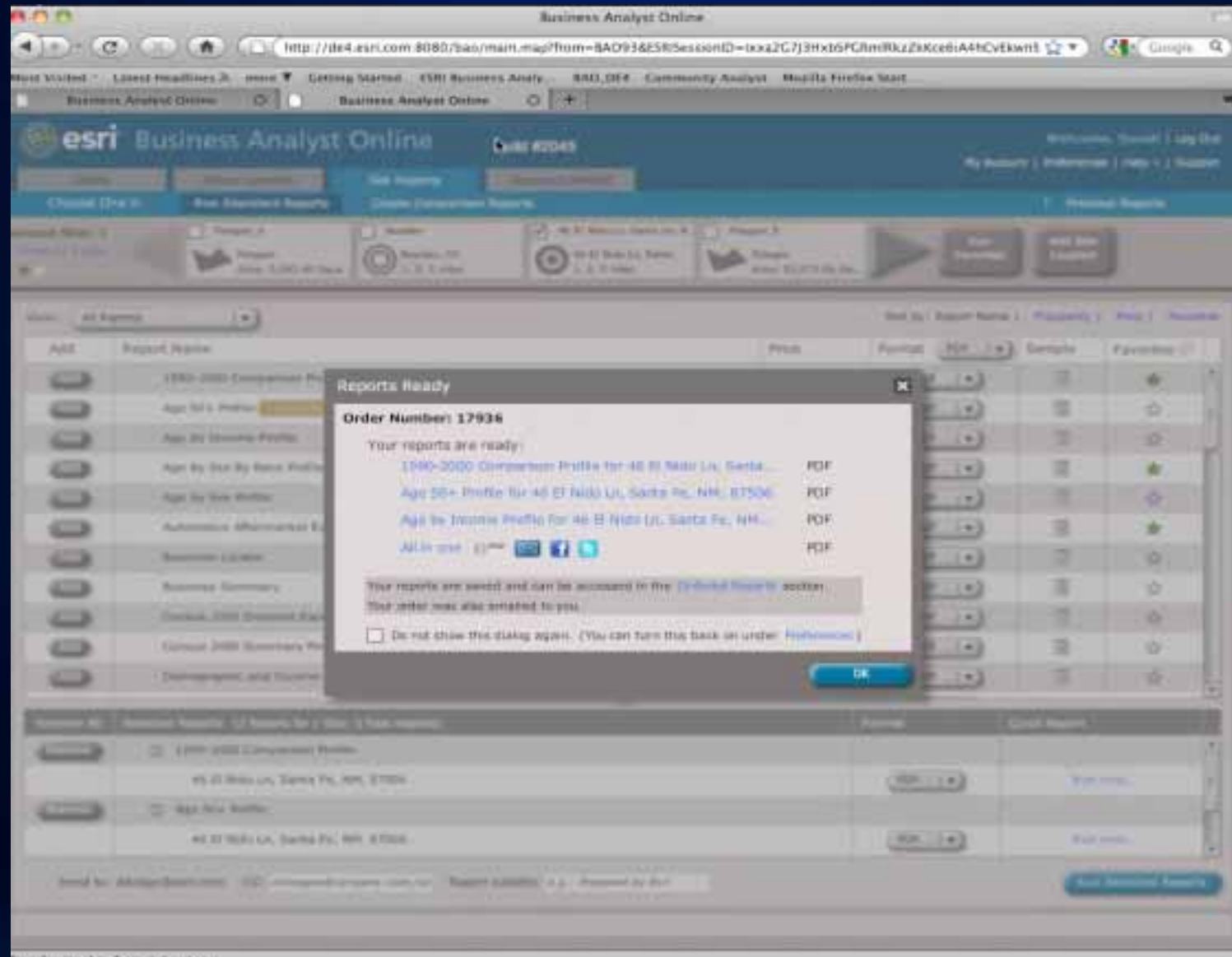
| Add | Report Name | Price | Format | PDF | Sample | Favorites |
|---------------------|--|----------|---------------------|-----|--------|-----------|
| Add | 1990-2000 Comparison Profile | Included | PDF | | | |
| Add | Age 50+ Profile | Included | PDF | | | |
| Add | Age by Income Profile | Included | PDF | | | |
| Add | Age By Sex By Race Profile | Included | PDF | | | |
| Add | Age by Sex Profile | Included | PDF | | | |
| Add | Automotive Aftermarket Expenditures | Included | PDF | | | |
| Add | Business Locator | Included | PDF | | | |
| Add | Business Summary | Included | PDF | | | |
| Add | Census 2000 Detailed Race Profile | Included | PDF | | | |
| Add | Census 2000 Summary Profile | Included | PDF | | | |
| Add | Demographic and Income Comparison Profile | Included | PDF | | | |
| Add | Demographic and Income Profile | Included | PDF | | | |
| Add | Demographic and Income Profile (New Style) View Sample | Included | PDF | | | |
| Add | Detailed Age Profile | Included | PDF | | | |

Send to: ddodge@esri.com CC: colleague@company.com;col Report subtitle: [e.g.: Prepared by Esri](#)[Run Selected Reports](#)

Video



Video



Video

Full UI Specification

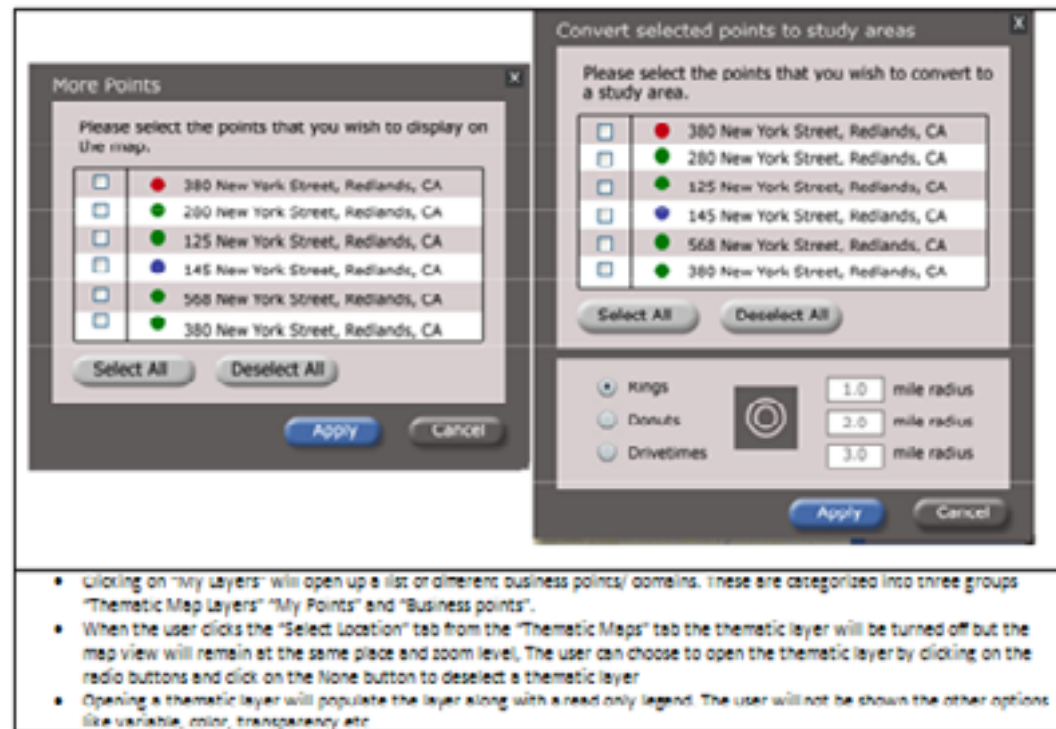
Get Reports: Standard Reports – Top section



- Clicking on "Standard Reports" will open the "Standard Reports" window.
- If no sites are created, the "Select Site" button in the "Select Location" tab will be disabled.
- If the user has created a site in the session, then the site that was created will be selected.
- Each site name to select the site in the "Select Site" list.
- On clicking on "Add More sites..." link, the "Add More sites" dialog will open.
- If the user makes the choice to select just for that session and if the user logs out, then the sites created based on date and time will be deleted.
- Now within a session if the user has added another two sites to the map. Those two sites will be added to the list of sites.
- Run Favorites button will be disabled.

BAO 3.0 User Interface Specifications

30





Neal Dinoff

Education:

BFA, University of the Arts

Experience:

15+ yrs cartographic &
UX design: Eureka Cartography,
Rand McNally, marchFIRST,
9 years @ Esri

Role:

Usability Lab Manager

Innovate



User Centered Design

User
Research



Analyze



Develop



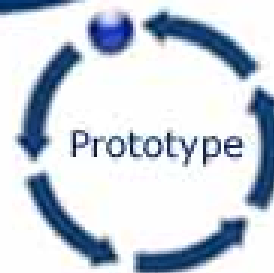
Usability
Testing



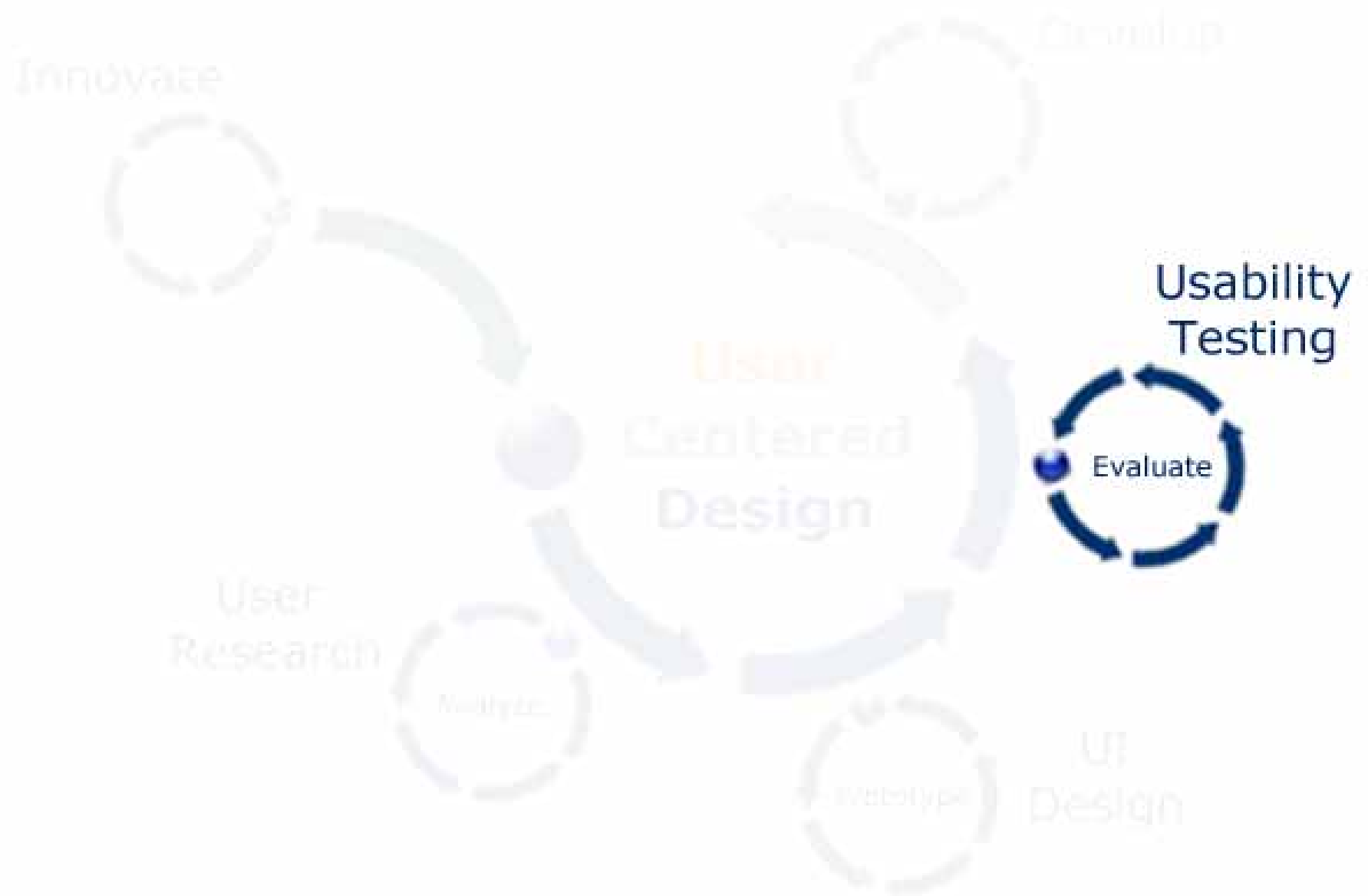
Evaluate



UI
Design



Prototype



Usability Testing as an Evaluation Tool

- **Functional:** Does it work?
- **Holistic:** Does it work the way users need it to work?
- **Usability:** Can they figure out how it works?

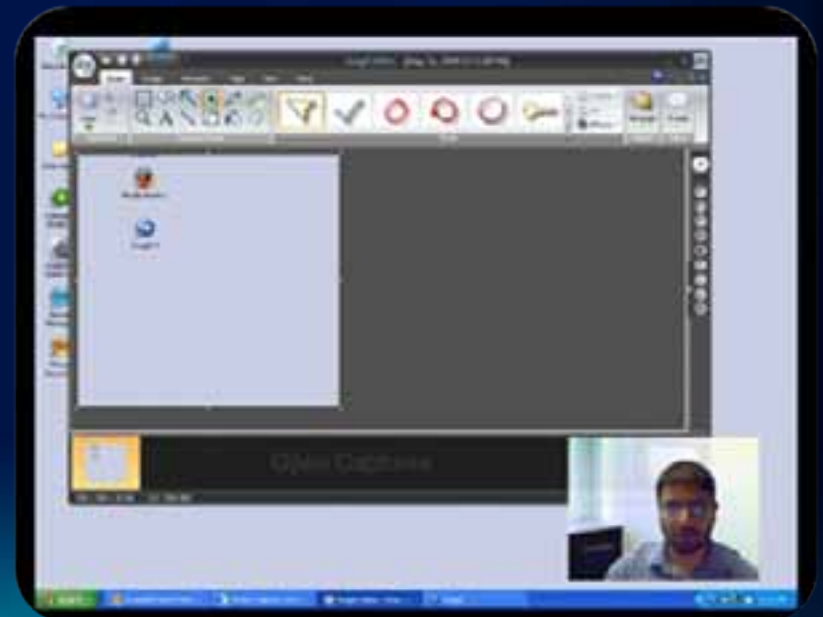
Usability Testing

- Participant studies
 - Watch typical users perform common tasks
 - 5-8 participants
 - One-on-one 90-minute sessions
 - Team and key stakeholders observe



BAO Tests

- Nine rounds of participant testing since 2008
- 50+ participants
 - Customers and staff proxies
 - In-house and in-the-field



Rule #3:
Fail Fast!

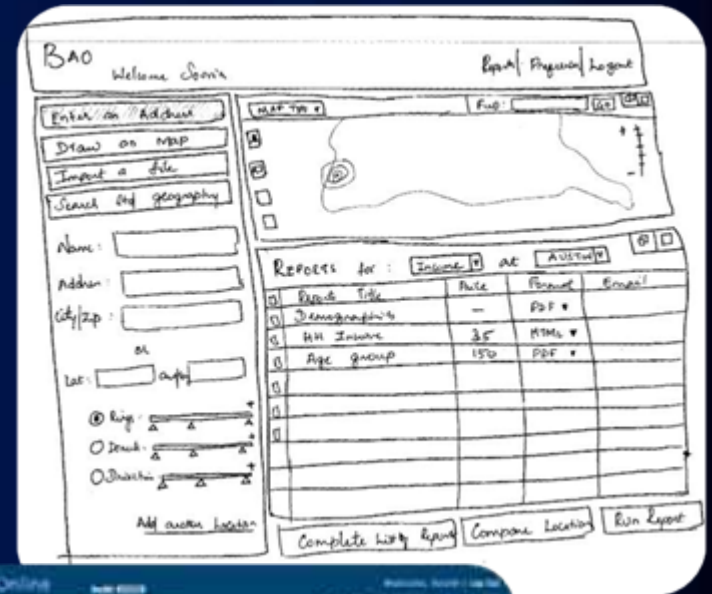
Rule 3: Fail Fast!

- The earlier you identify a problem the cheaper and easier it is to fix.
- Waiting until functional testing is waiting too long.



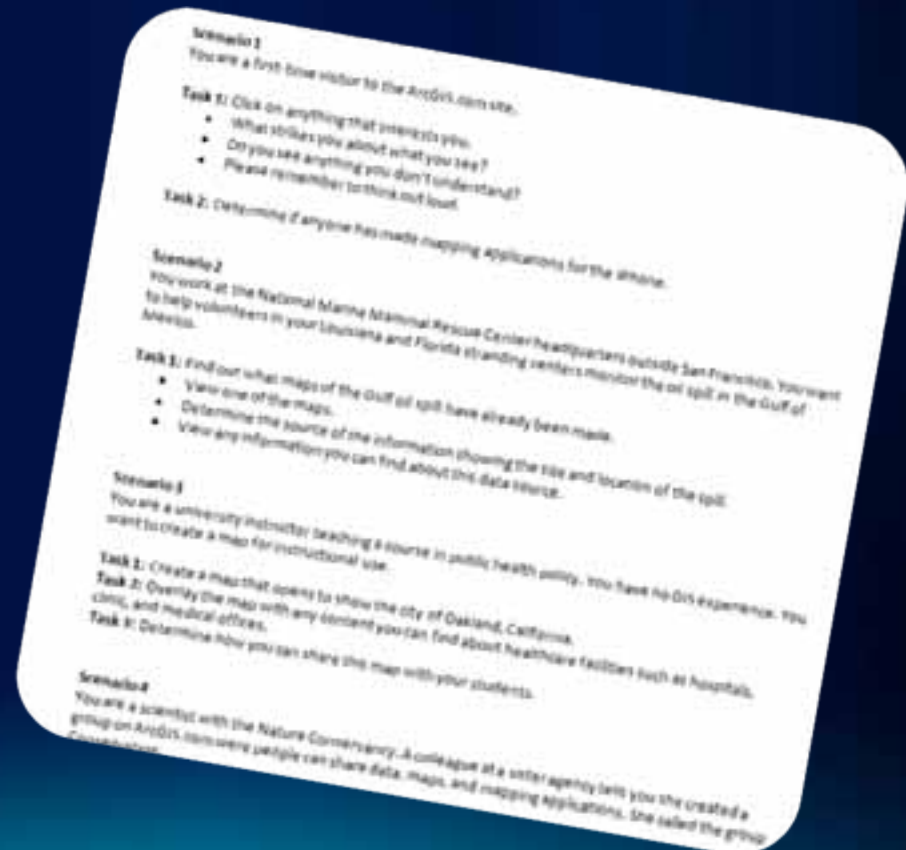
Design Validation Can Happen at Any Phase

- Wireframes
- Design comps
- Working prototypes
- Partially completed apps
- Completed apps



Test Scenarios

- Written scenarios of typical tasks
 - Unbiased language
 - Independent tasks



Example Scenario

- **You are considering locating a business at 14528 Ventura Blvd in Sherman Oaks, California.**
 - **Show this location on the map.**
- **The target market for your business is young professionals.**
 - **Create a map of Sherman Oaks showing the number of people age 25-29 with household incomes of \$50,000-75,000.**

Example Scenarios

- You want to map a combination of factors that identify your target market. Begin by looking at per capita income, median age, and 5-year projected population growth. You want to see a combination of
 - Areas projected to grow in population by 0.5-1.0 percent
 - Have a median age below 45
 - And have per capita income above \$50,000

What We Observed: Smart Map Search

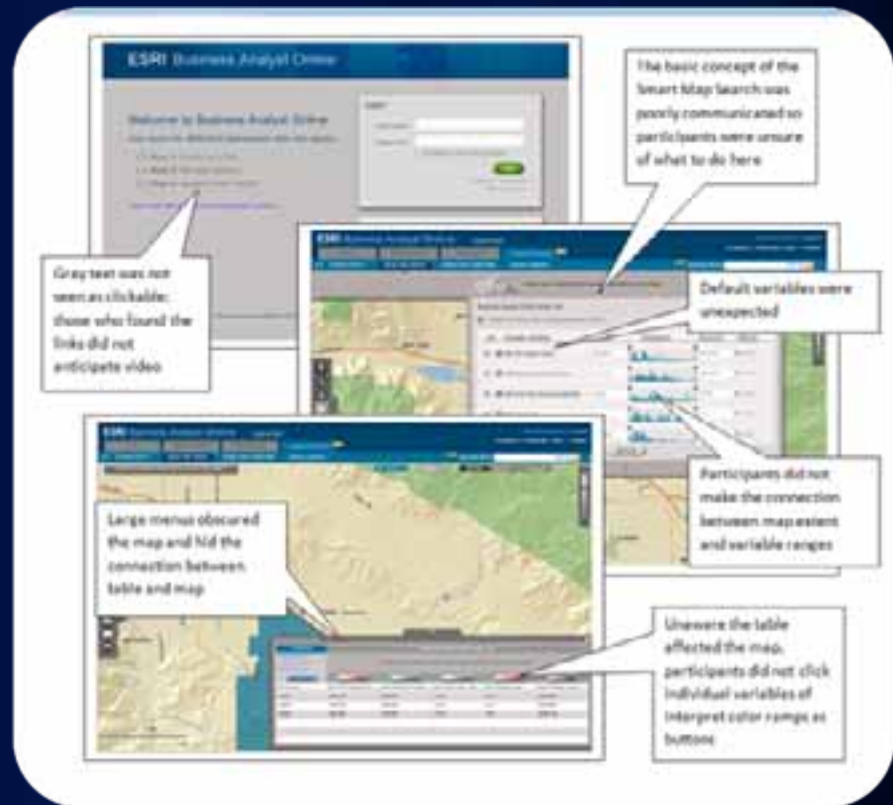
- **Initial test**
 - Users didn't understand the feature's core concept
 - They were baffled by pre-selected variables
- **We made changes**
 - Added a wizard and video
 - Allowed users to select variables
- **Were the changes improvements?**

Smart Map Search

Before and After

Usability Report

- Identifies the nature and severity of usability issues
- Provides the development team with guidance on what and where to tweak





Garry Burgess

Education:

B.A.A – Geography + Computer Science

M.S. – GIS / Remote Sensing

Experience:

15+ Years Development

Built lots of cool stuff

Role:

Development

Innovate



User Centered Design

User
Research



Analyze



Develop



Usability
Testing



Evaluate



UI
Design



Prototype

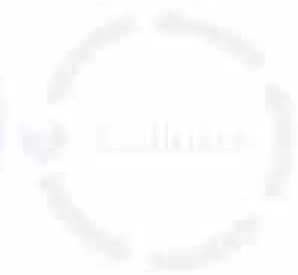
Innovate



Develop



Usability
Testing



UI
Design



User
Centred
Design

User
Research





No clear spec, unrealistic deadlines....
"Cut me Mic" I'll release this dam thing



“Adrian, we released on time!”

Collaborative Design

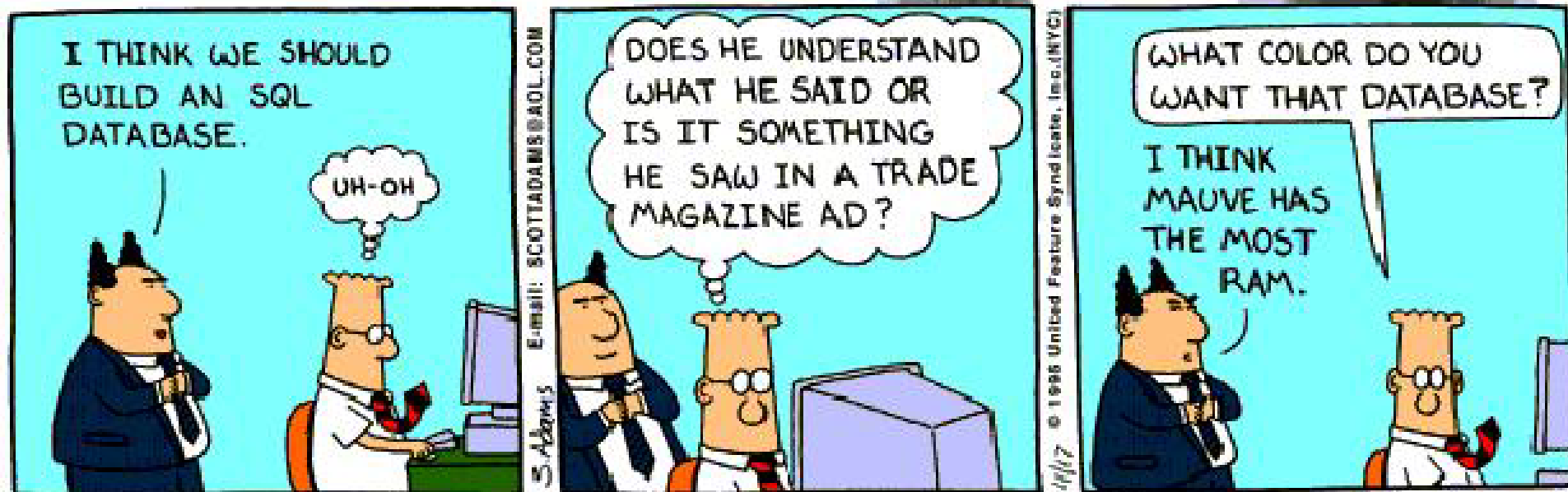
Nothing just gets
handed over the
fence



TEAMWORK!



“What” vs. “How”



Clear Specifications

Led to better development estimates

Better at meeting deadlines

Focused on users

Reduced stress



Does not Stifle Innovation

Designs can
start with
developer
prototype



The first iPod – circa 1895

Innovate



User Centered Design

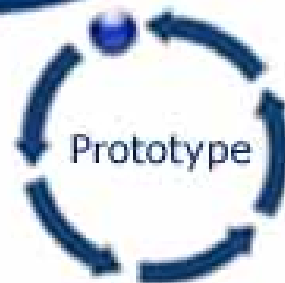
User
Research



Usability
Testing



UI
Design



Ok, we lied. A couple of lines of code:

```
If (users = happy)
{
    devTeam = happy;
}
else
{
    devTeam <> happy;
}
```

Professional end result = Happiness



WARNING



**CHALLENGES
AHEAD**

Challenges

“A lot of cooks in the kitchen”

Slows down development,
but improves quality

Focus on iteration

Requires more planning for test,
fix and stabilization

Summary

A User Centered design is a collaborative effort

Encourages developer input and innovation

Results in higher user satisfaction

“When a person calls in and we point them to BAO and get them started, we instruct them to call back if they get stuck at all. They never do.

On the previous version, 9 times out of 10 they got stuck and had to call us for assistance.”

- Paula Laborce, Esri Tele-Business

Rule #1:

Know your user.

Rule #2:

If it's not usable, it doesn't exist.

Rule #3:

Fail fast!

Questions?

Please Fill Out Your Surveys!
esri.com/sessionevals

Thanks for Coming!