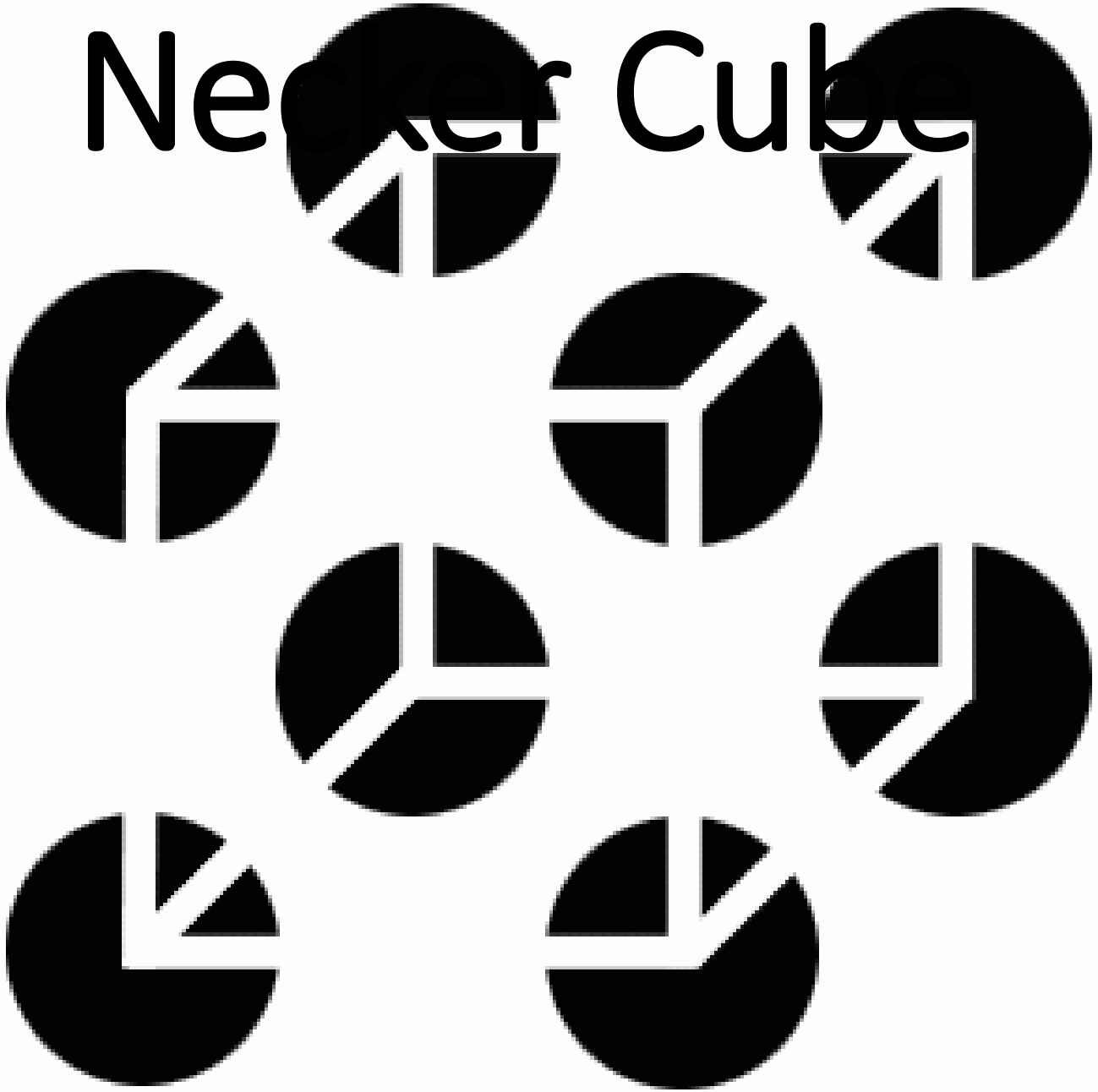
UI, UX, Users, and You

A Developer's Guide to Designing User Interfaces and User Experiences for your Users

Necker Cube



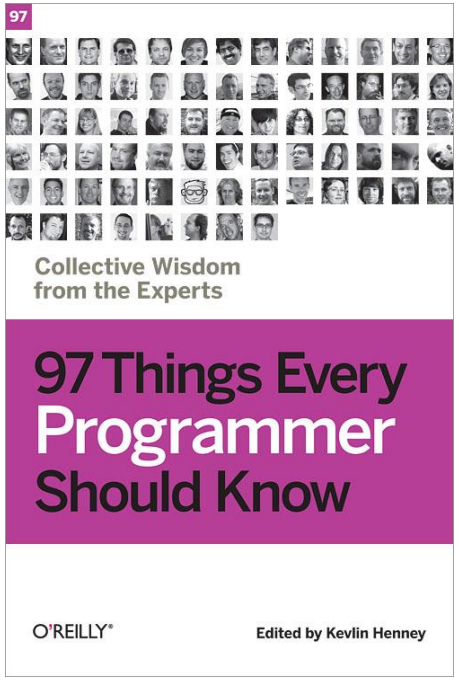
UI, UX, Users, and You

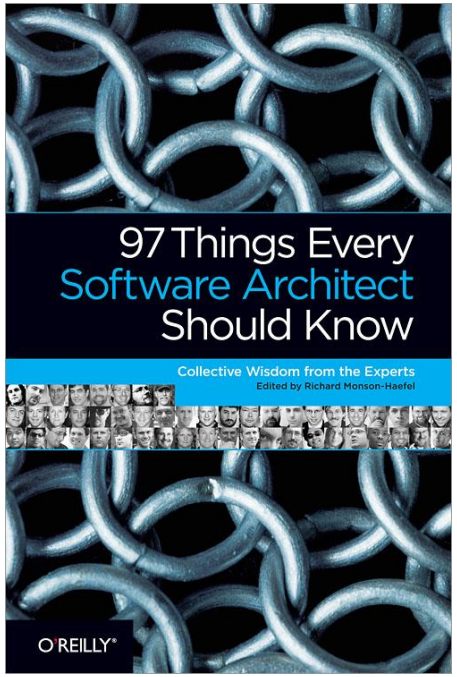
A Developer's Guide to Designing User Interfaces and User Experiences for your Users

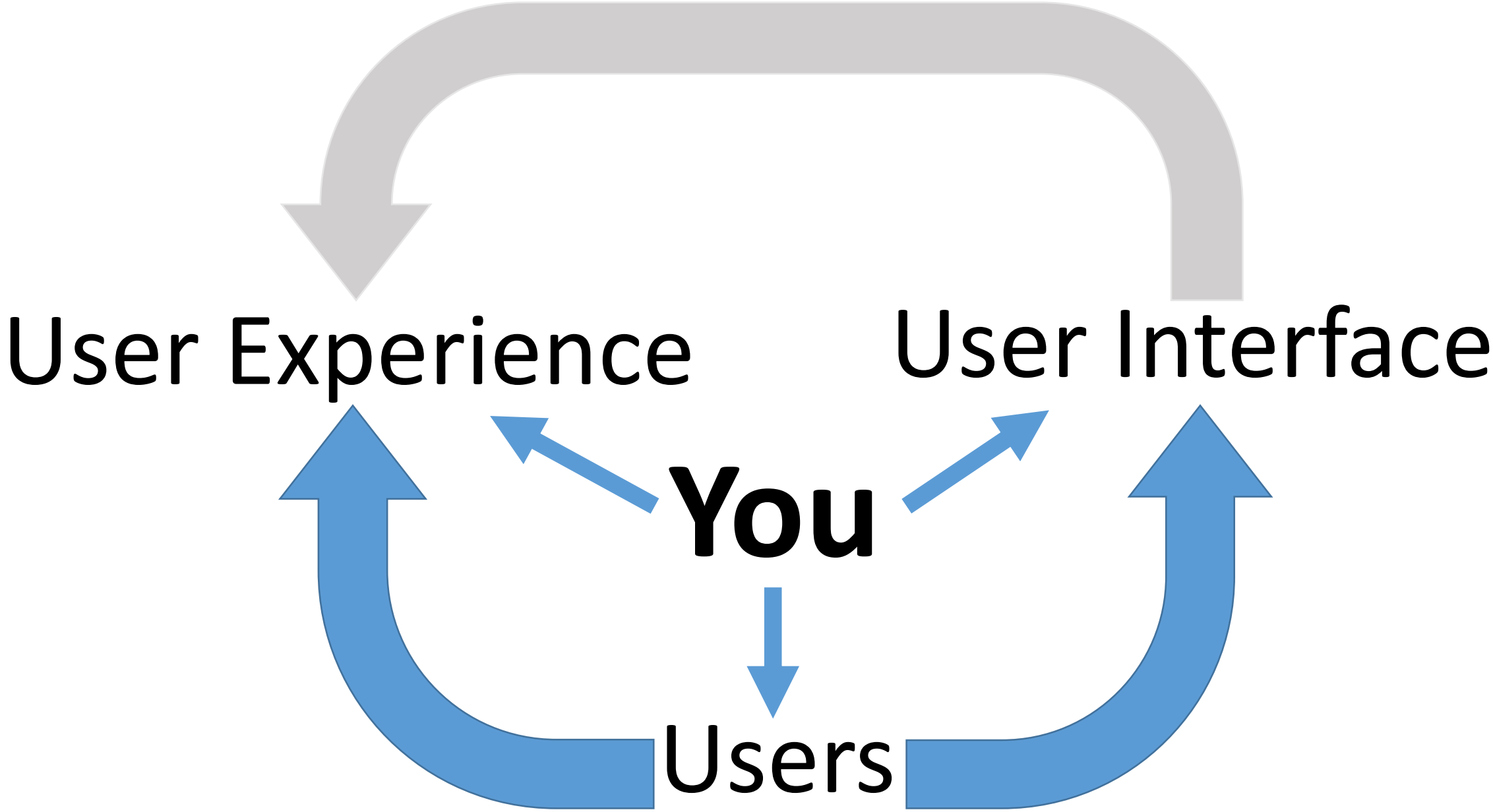
Burk Hufnagel

Programmer and Solution Architect with Daugherty Business Solutions

Speaker at JavaOne twice; voted RockStar in 2010






User Experience
User Interface
You
Users

Quick Definitions

Users

The people who use what we create.

User Interface

The part of your creation they interact with.

User Experience

How they feel about the interaction.

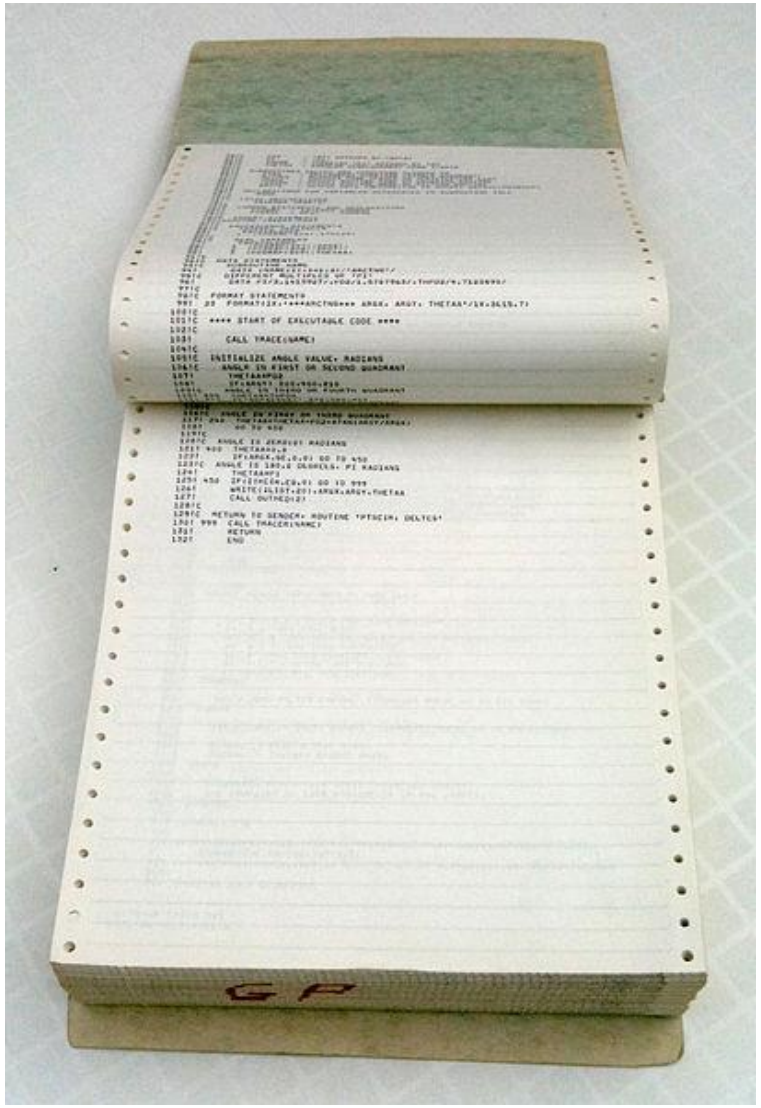
Public Service Announcement

Learning about UX reminds me of Master Yoda's quote about the Dark Side of the Force:

"Once you start down the dark path, forever will it dominate your destiny. Consume you it will, as it did Obi-Wan's apprentice."

Users

- Historically, a User was a trained technician who knew how to run computer jobs, allocating memory and other resources as they were needed. This is why the programs in TRON believed in the power of the Users.
- End-Users were people who didn't necessarily know how to use the computer and just worked with the results it returned; often as printed reports on continuous form paper.



Controversy about “Users"

Don Norman and others have made the point that the term user is derogatory, and dehumanizes the people we’re supposed to be serving.

Still others, like Jimmy Guterman at O’Reilly, pointed out that “the only industries that refer to their customers as users are high tech and illicit drugs.”

Software = Drug?

No. But, you probably know people who seem hooked on games, social media, or even email and chat.

Great UX can be compelling.

Searching Google for the phrase “x addiction” where x is:

Games: Angry Birds -> 1,630,000

World of Warcraft -> 20,400,000

Twitter -> 85,500,000

Facebook -> 91,400,000

Email -> 51,500,000

Google -> 54,300,000

User Experience

User Experience is how someone feels about interacting with your software – before, after, and especially while, they are using it.

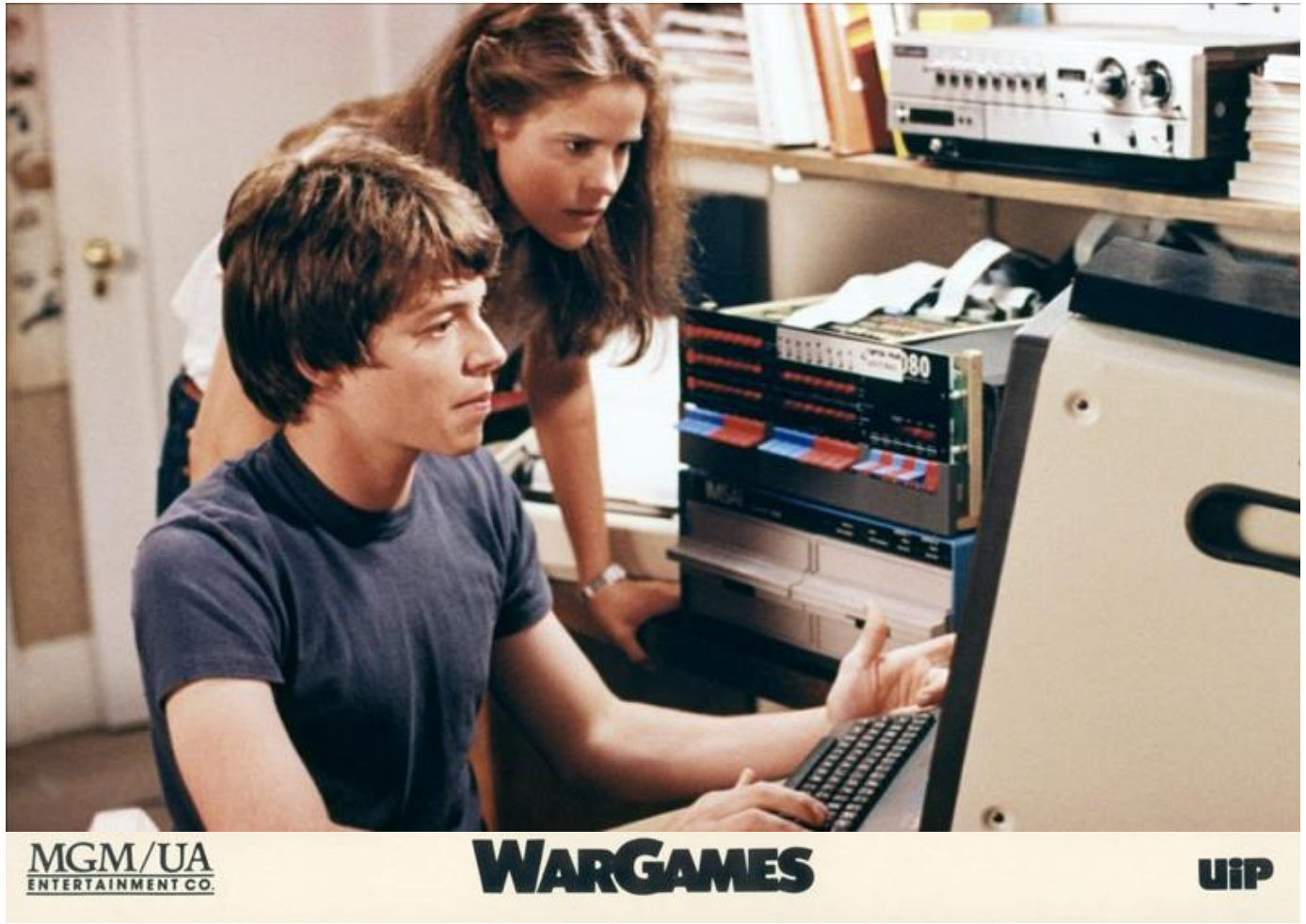
User Experience

Rule 1: There is always a user experience.

Corollary: If you don't intentionally design the UX then you have no control over what the user experience will be.

This is probably a Bad Thing.

UX Can Change Over Time



So what?

Yodlee and Mint

Yodlee spent 10 years and $116 million creating services connecting to about 11,000 financial data sources.

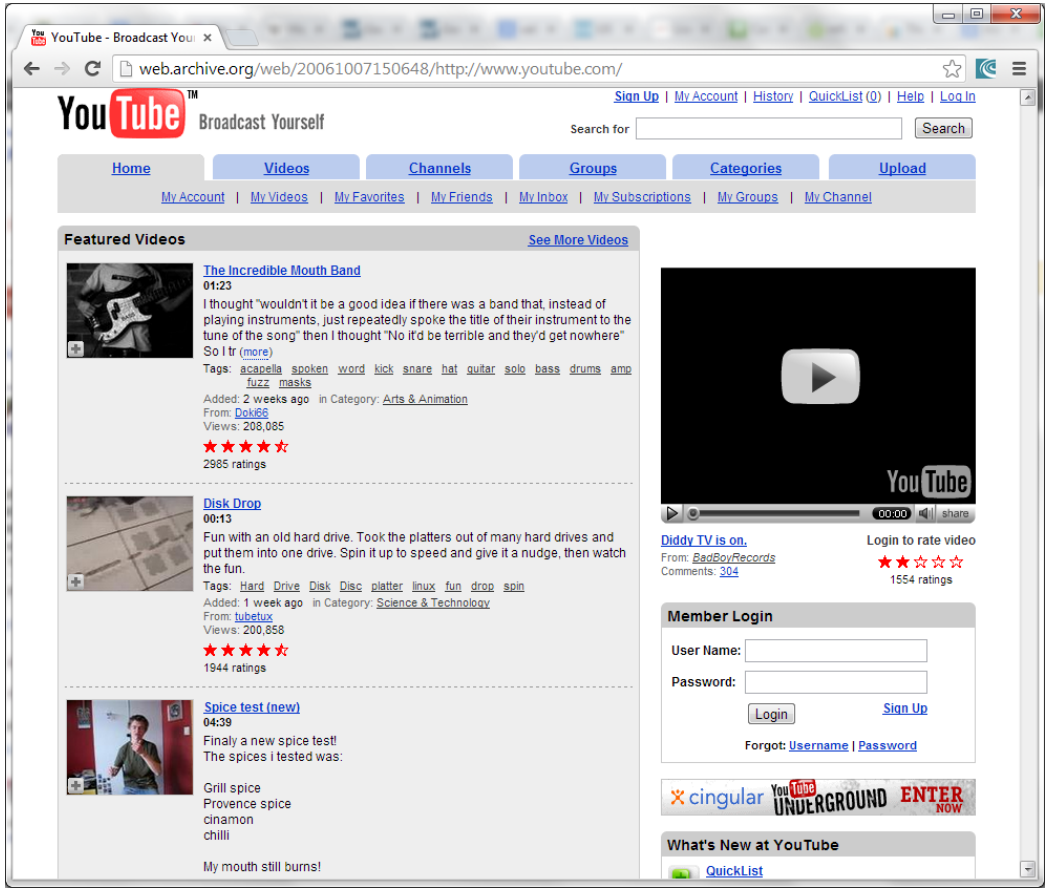
Mint spent two years and $32 million building a great UI/UX layer on top of Yodlee and got bought for $170 million.

Yodlee did the “hard work: and only made about $4 million from Mint.

Adobe and YouTube

Adobe create Flash and figured out how to play video over the web.

YouTube built a great UI/UX that let people upload and share their videos, and got bought 19 months later for $1.65 billion.



Teehan + Lax Fund (UX Fund)

Geoff Teehan and Jon Lax (founders of Canadian UX design agency) invested $50,000 in 10 companies, including Apple, Google, Netflix, and RIM that they felt provided great UX. In four and a half years, it increased over 100%.

TEEHAN+LAX UX FUND

Change Since November 1, 2006

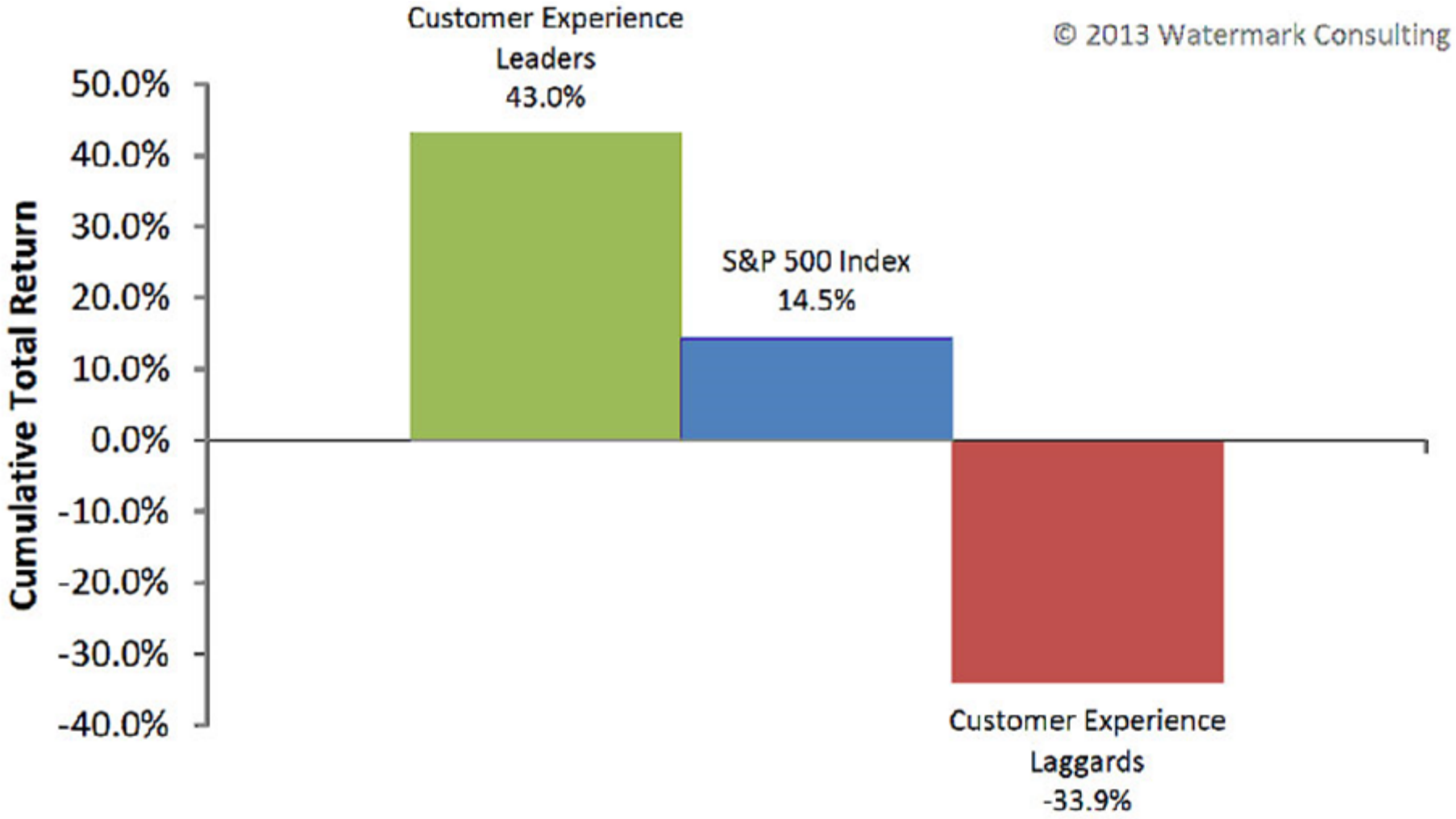
TEEHAN+LAX UX FUND

+101.8%

NASDAQ	+21.76%	NASDAQ 100	+39.15%	Total Initial Investment:	$49,672.90
S&P 500	-0.92%	NYSE	-0.79%	Inception Date:	Nov. 1, 2006
DOW	-100%			Days Until Maturity:	NA

Symbol	Last Trade	Today's Change		Shares	Buy Price	Current Value	Gain/Loss	
AAPL	350.13	$0.00	0%	62	$80.86	$21,708.06	+$16,694.74	+333.01%
ERTS	20.18	$0.00	0%	94	$53.10	$1,896.92	-$3,094.48	-62.00%
GOOG	544.10	$0.00	0%	10	$478.37	$5,441.00	+$657.30	+13.74%
JBLU	5.66	$0.00	0%	400	$12.57	$2,264.00	-$2,764.00	-54.97%
NFLX	232.67	$0.00	0%	180	$27.62	$41,880.60	+$36,909.00	+742.40%
NKE	82.32	$0.00	0%	108	$46.03	$8,890.56	+$3,919.32	+78.84%
PGR	21.94	$0.00	0%	207	$24.19	$4,541.58	-$465.75	-9.30%
RIMM	48.65	$0.00	0%	126	$39.34	$6,129.90	+$1,173.06	+23.67%
TGT	49.10	$0.00	0%	84	$59.31	$4,124.40	-$857.64	-17.21%
YHOO	17.70	$0.00	0%	190	$26.14	$3,363.00	-$1,603.60	-32.29%
Total:	--	--	--	--	--	**$100,240.02**	**+$50,567.95**	**+101.8%**

Watermark Consulting, 2013
6-Yr Cust Experience ROI Study



Designing a Great User Experience

Understand who is in your target audience, and who is not.

Figure out the user model and match it as closely as possible.

What are they trying to accomplish?

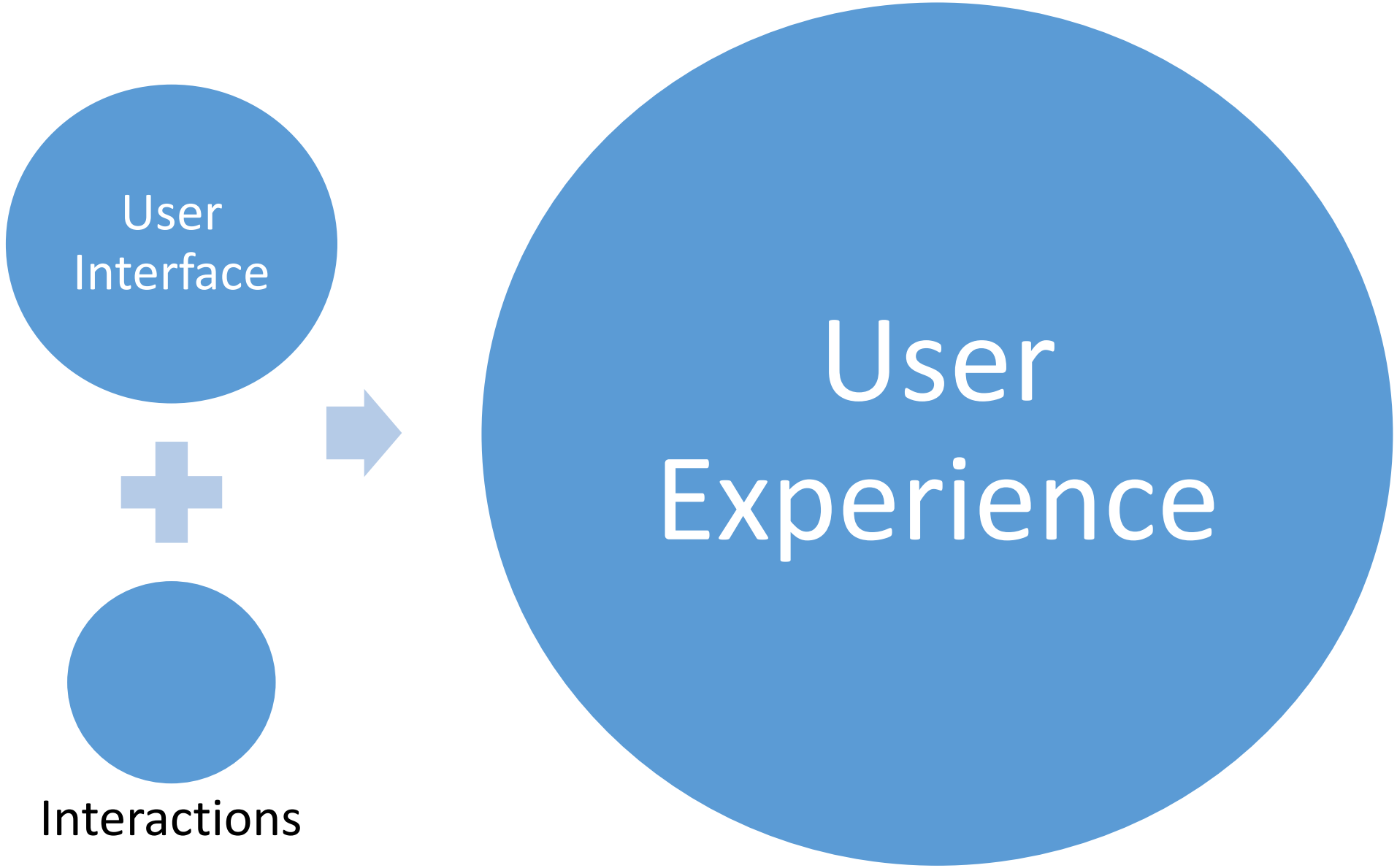
What's their skill level?

What's the context?

- Desktop, mobile, outdoors, etc. Constraints help determine what you need to supply.

Attractive things work better

User Interface

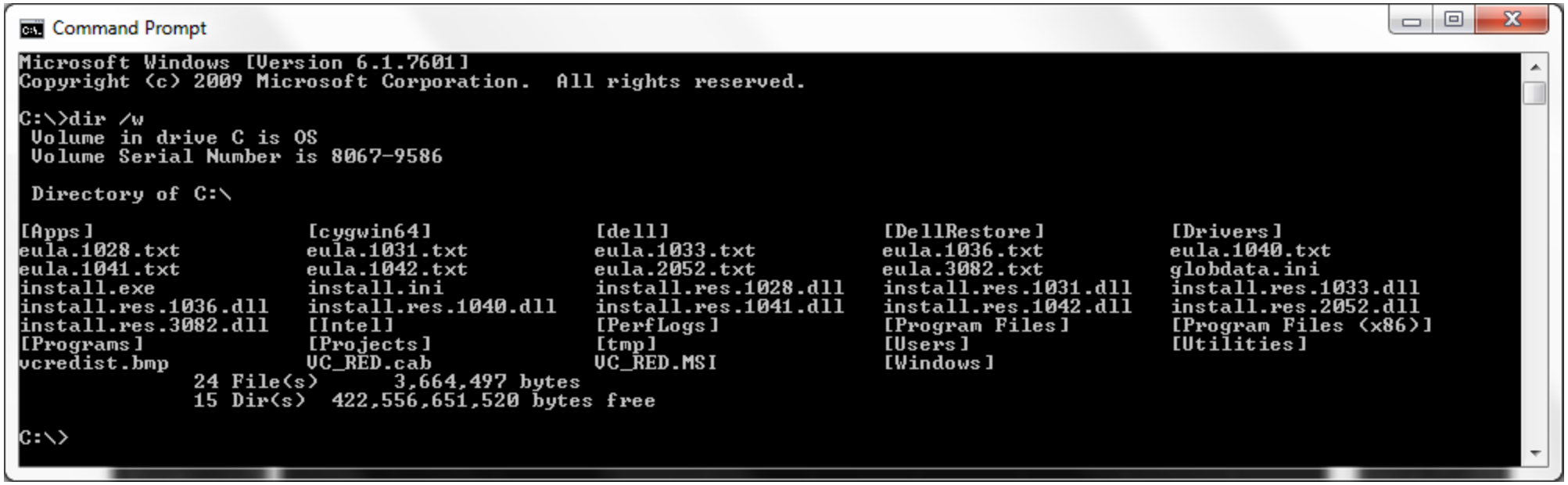

User Interface
Interactions
User Experience

Common Types of User Interfaces

Text-based: Command line interface

Graphical User Interface (GUI)

Command line user interface

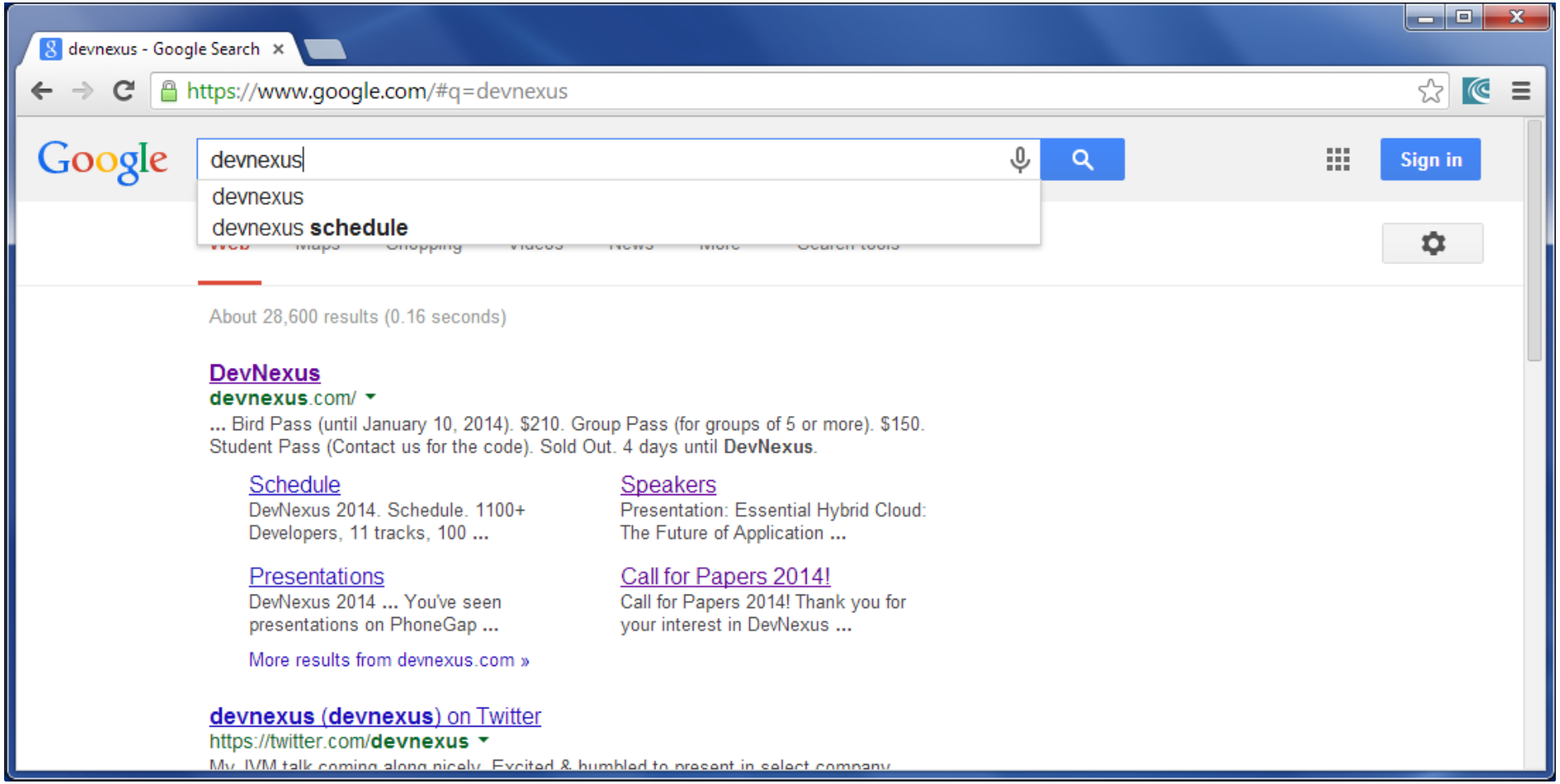


Command line user interface

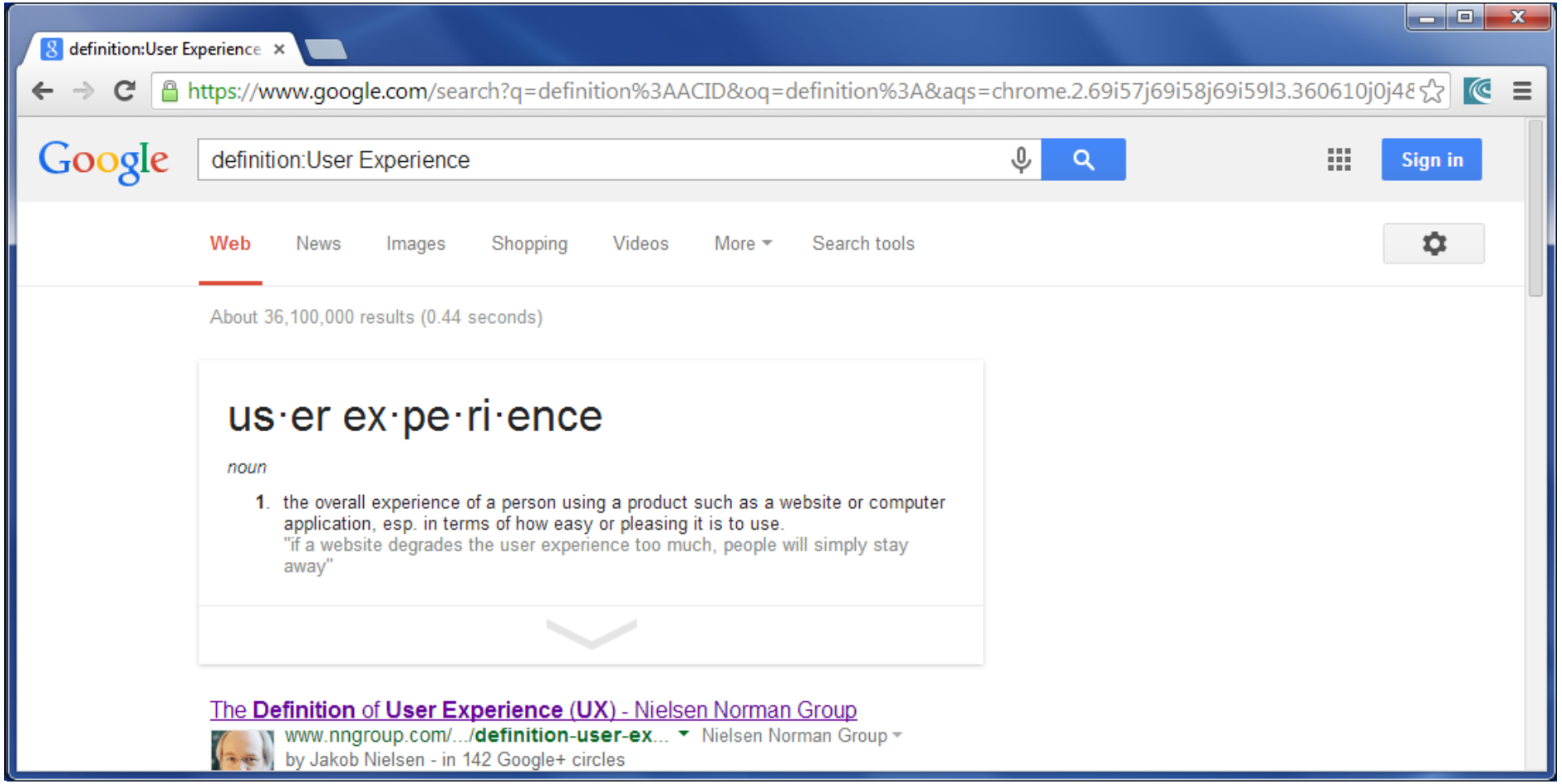
Grep command to find all the properties specified in files,
excluding the target directory and it's subdirectories:

```
grep -r --include=*.xml --exclude-dir=target
        -o $\{com.efx.channel.batch.[[:alpha:].]*\}
```

Command line user interface



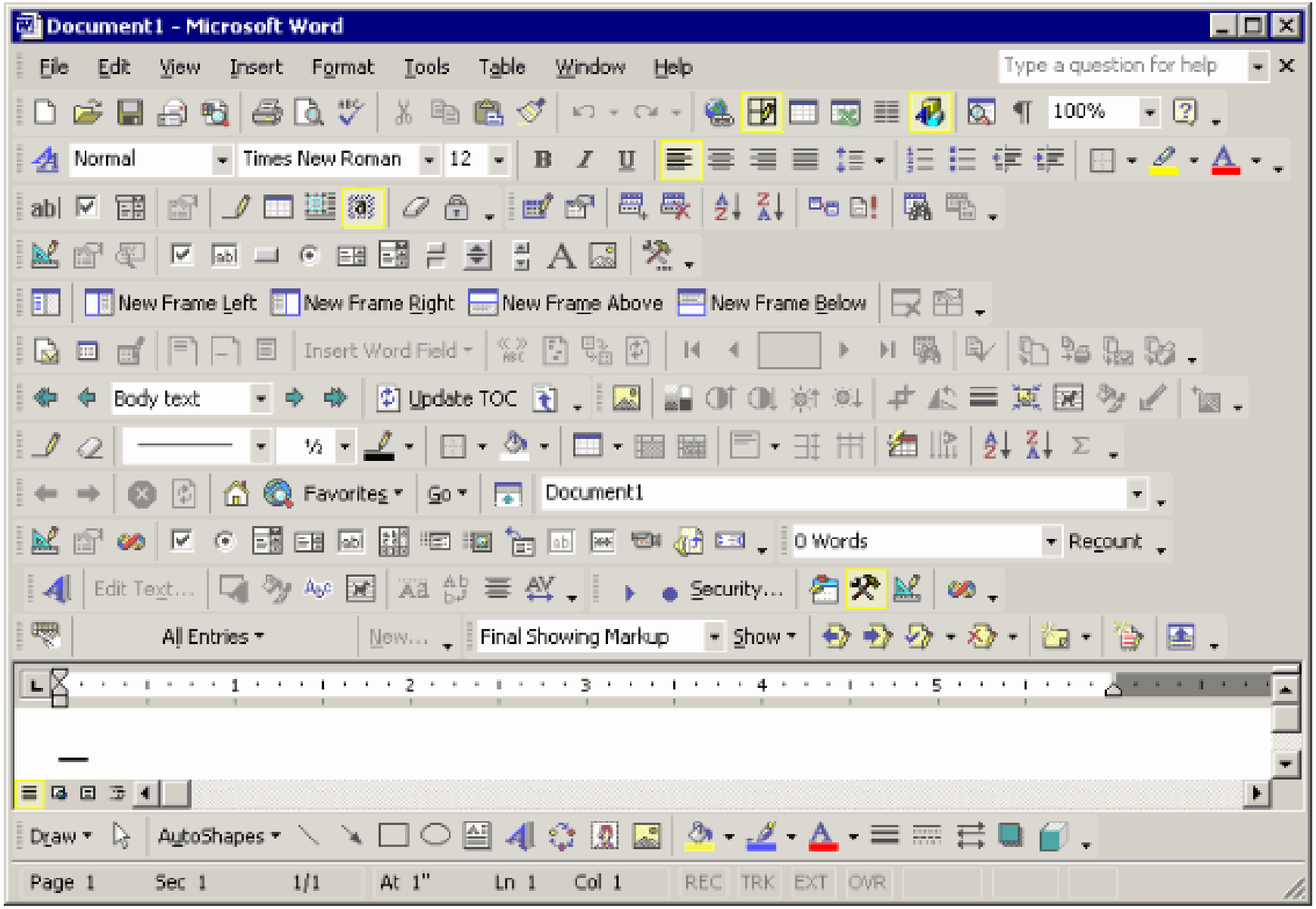
Command line user interface



Designing simple use experiences often turns out not to be about “How can I make this simpler?” but rather “Where should I move the complexity.”

Giles Colborne – Simple and Usable

Conserve and move complexity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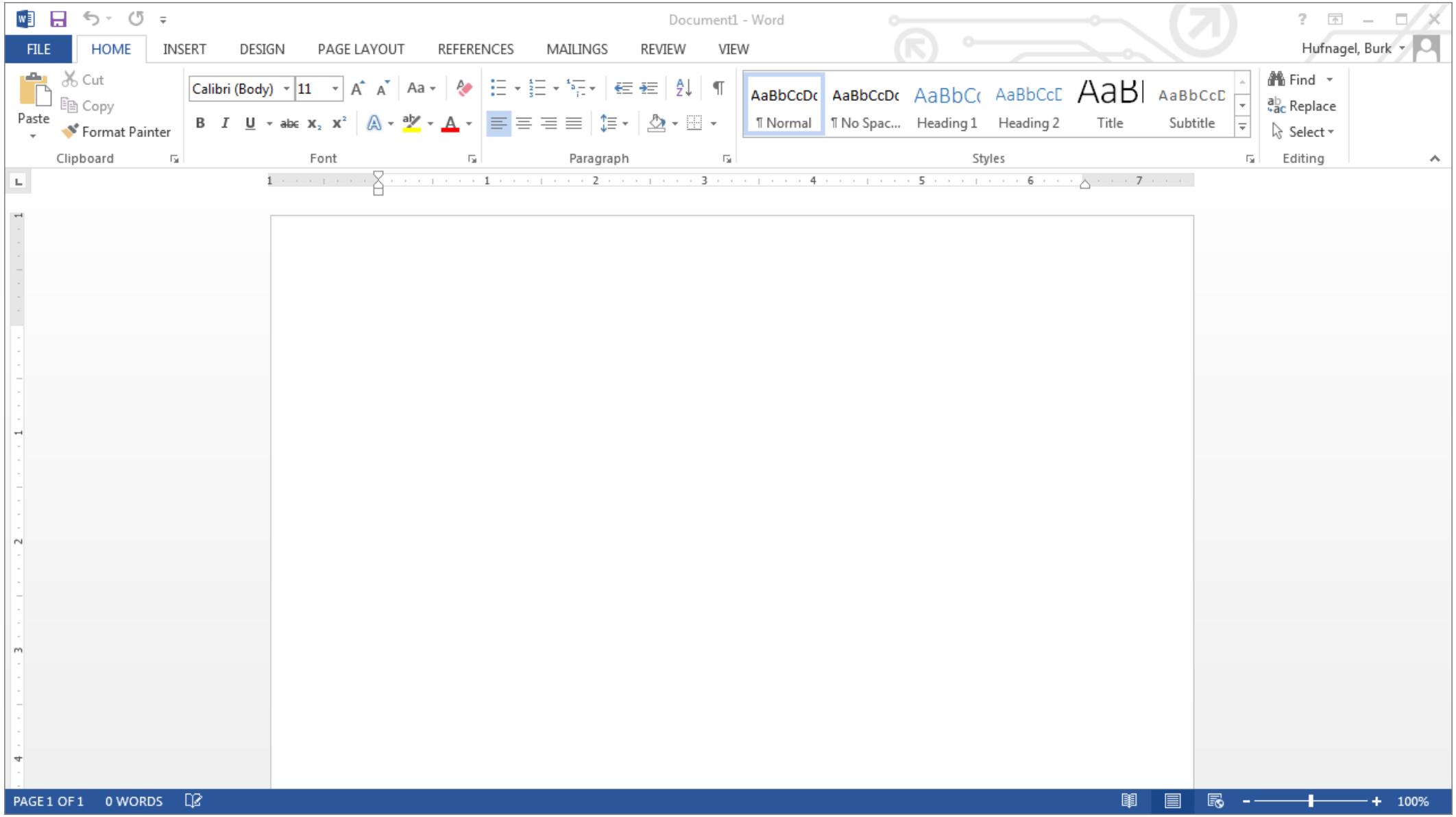
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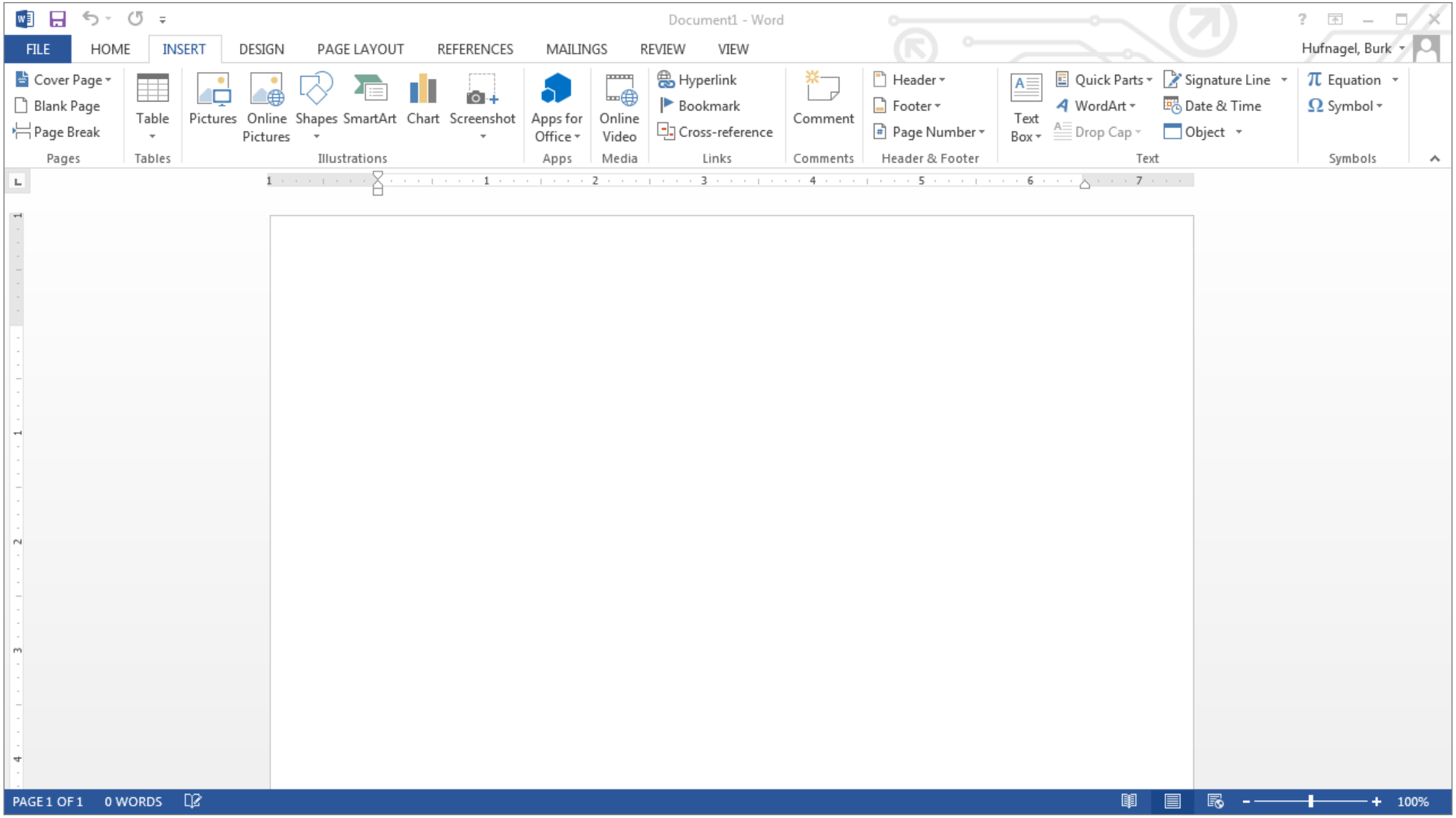
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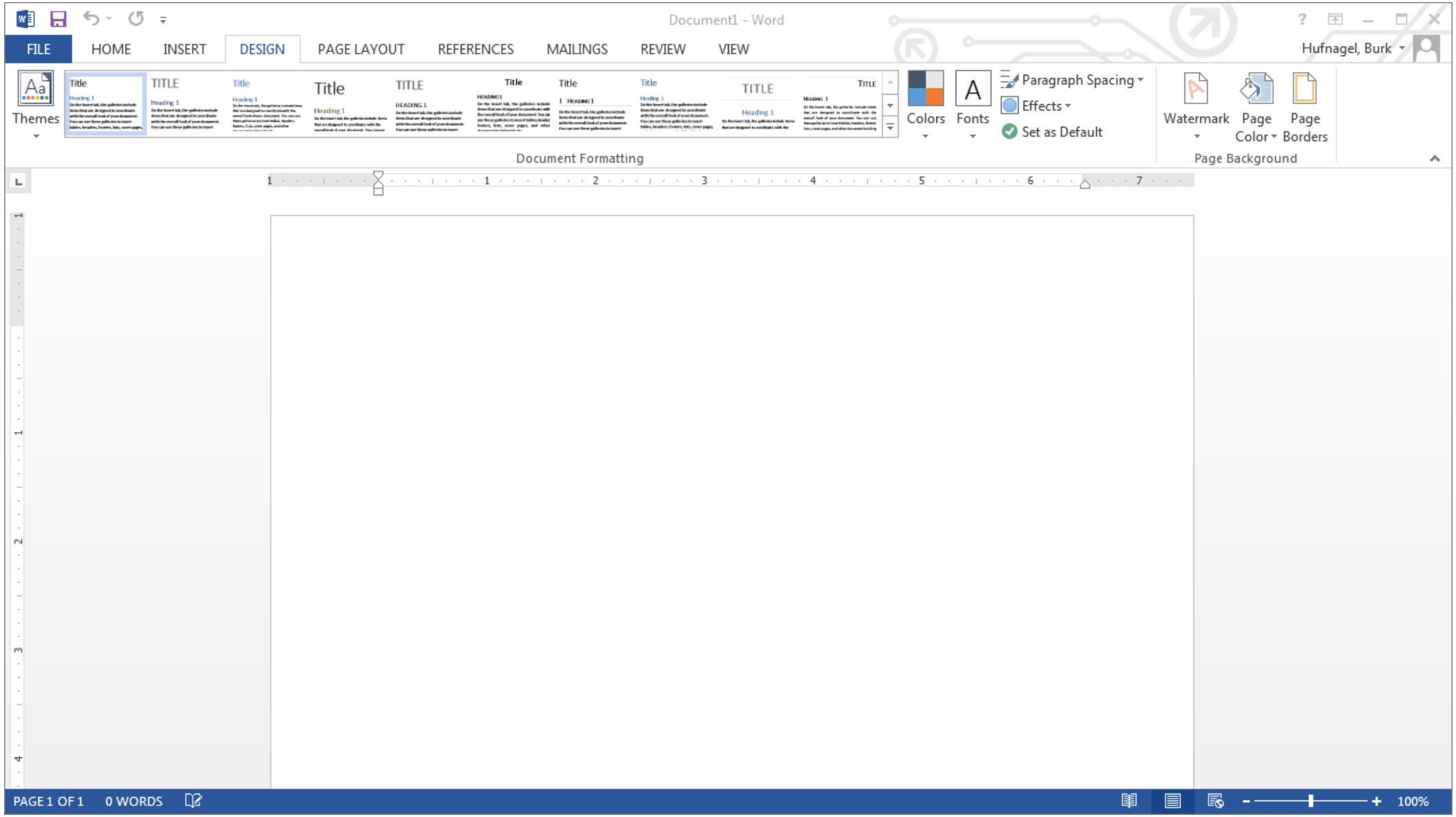
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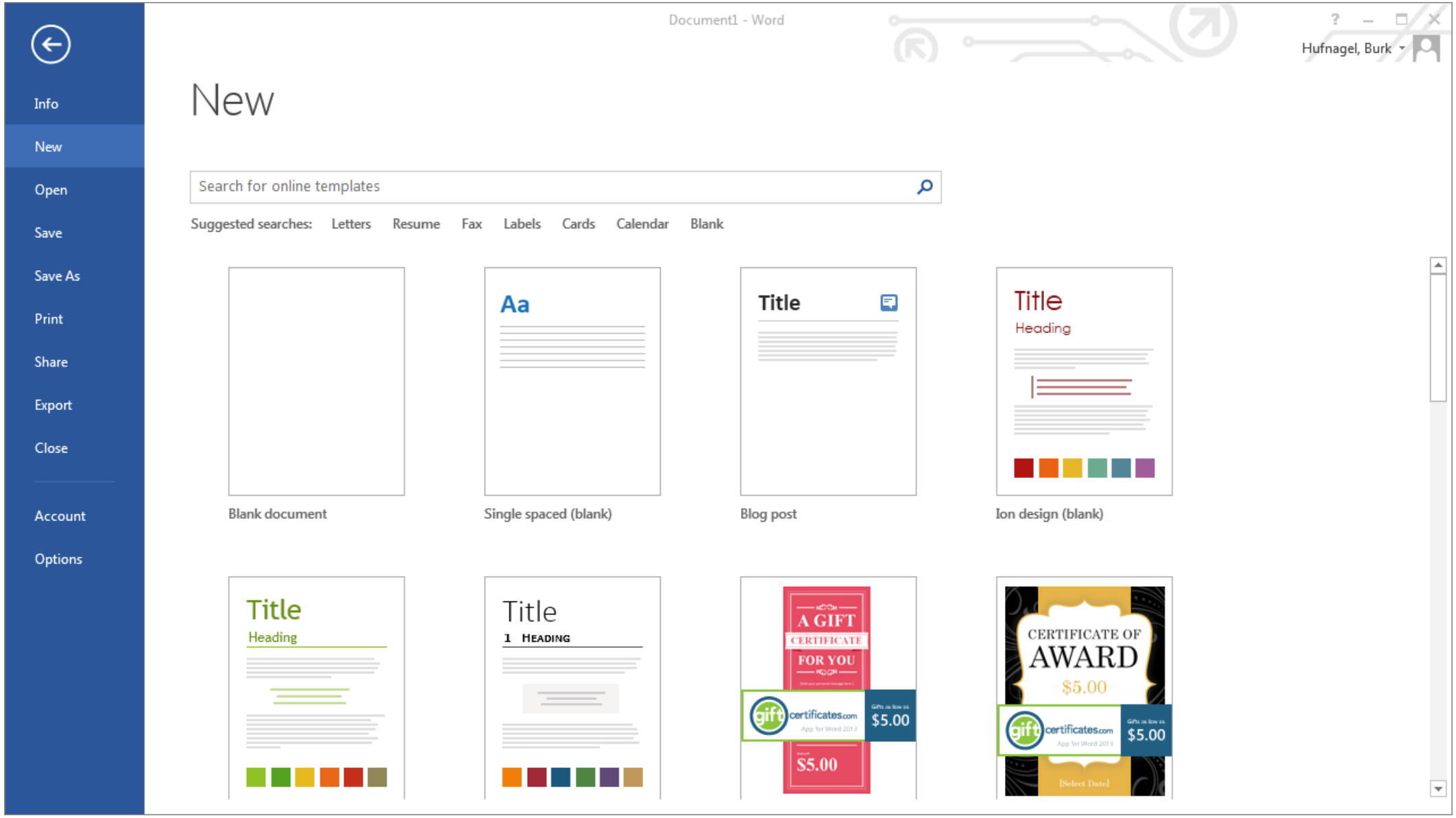
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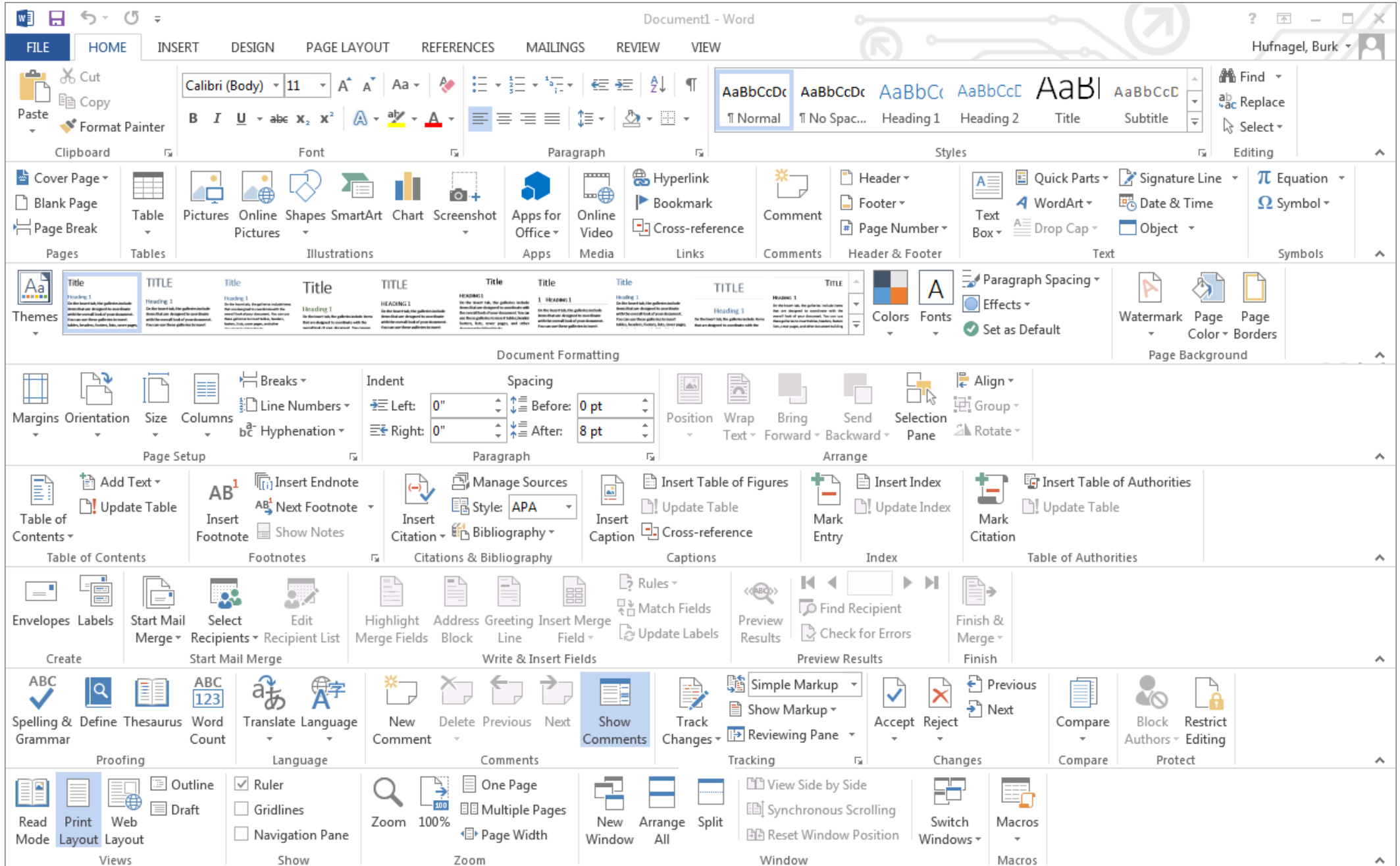
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Track Changes
Simple Markup
Show Markup
Reviewing Pane
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Accept
Reject
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Block Authors
Restrict Editing
Protect
Read Mode
Print Layout
Web Layout
Outline
Draft
Views
Ruler
Gridlines
Navigation Pane
Show
Zoom
100%
One Page
Multiple Pages
Page Width
Zoom
New Window
Arrange All
Split
View Side by Side
Synchronous Scrolling
Reset Window Position
Switch Windows
Window
Macros
Macros

Biological Design Principles

We are visual thinkers and great at seeing patterns

DOG HOUSE CAT

RED ORANGE YELLOW

GREEN BLUE PURPLE

BLACK RED ORANGE

BLUE YELLOW GREEN

PURPLE BLACK RED

Biological Design Principles

We are visual thinkers and great at seeing patterns

Chunking

Things near each other are related somehow

Grouping

Things farther apart are not related

Importance

Size determines importance. Big threat vs small threat.

Billing Information

*First Name:	Jane	*Address:	123 Sesame Street
*Last Name:	Doe		
Company:		*City:	Good Towne
Phone:	678.555.1212	*State:	GA
Email:		*Zip Code:	30022
Re-type Email:		*Country:	United States

Billing Information

***First Name:**	Jane
***Last Name:**	Doe
Company:	
Phone:	678.555.1212
Email:	
Re-type Email:	

***Address:**	123 Sesame Street
***City:**	Good Towne
***State:**	GA
***Zip Code:**	30022
***Country:**	United States

Billing Information

*First Name: Jane

*Last Name: Doe

*Address: 123 Sesame Street

*City: Good Towne

*State: GA

*Zip Code: 30022

*Country: United States

Company:

Phone: 678.555.1212

Email:

Re-type Email:

Billing Information

Customer Name

*First: Jane

*Last: Doe

Billing Address

*Street: 123 Sesame Street

*City: Good Towne

*State: GA

*Zip Code: 30022

*Country: United States

Company Information

Name:

Phone: 678.555.1212

Email:

Re-type Email:

Production Support / Operations

Hidden Users

Production Support/Operations

Most common UI is: Log files

```
2014-02-25 23:15:02.517 Error:Ur
```

Production Support/Operations

Most common UI is: Log files

```
2014-02-25 23:07:01.020 Info:Pro
2014-02-25 23:15:02.517 Info:Sec
2014-02-25 23:15:04.213 Info:Dat
2014-02-25 23:15:04.562 Info: Pr
2014-02-25 23:15:04.666 Error:Ur
2014-02-25 23:15:04.823 Info: Pr
```

Production Support/Operations

- Ask them what would make their lives easier.
  - Monitoring and logging
- Make sure log files answer the important questions:
- When did it happen?
  - Use YYYY-MM-DD HH:MM:SS:mmm for sorting and duration calculations
- What happened? Standardize terminology on error levels
- What was impacted? Transaction IDs, file info, non-PI data involved.

Hidden Users

Production Support / Operations

QA / Testers

QA / Testers

Most common UI is the end users’.

May also use debug-level log file entries.

HTML with IDs

```
<form id="BillingInfo" action="billingInformationProcessor.html" method="post"
   <fieldset>
      <legend>Billing Information</legend>
      <p><label for="FirstName" id="FirstName">First:</label><input…
      <p><label for="LastName" id="LastName">Last:</label><input…
      <p><label for="Street:" id="StreetAddr">Street:</label><input…
      <p><label for="Apt" id="Apartment">Apt:</label><input…
```

Hidden Users

Production Support / Operations

QA / Testers

Other Developers

API users

API Users

Traditional UI: JavaDoc

Better UI: Unit Tests

Source Code Users

Traditional UI: Just the Source

Better UI: Executable Specifications and Unit Tests

```
public class Decider{
    public Decider(){
    }
    public boolean isIt(int number){
        if(number<=1) {
            return false;
        }
        List<Integer> values = new ArrayList<Integer>();
        values.add(1);
        values.add(number);
        for(int i=2;i<Math.sqrt(number);i++)
            if( number%i==0){
                values.add(i);
                if(number/i!= i)
                    values.add(number/i);
        }
        int value=0;
        for(Integer i:values)
            value+=i;
        return value-number==number;
    }
}
```

```
public class Decider {
    public Decider(){
    }

    public boolean isIt(int number){
        if(number<=1) {
            return false;
        }

        List<Integer> values = new ArrayList<Integer>();
        values.add(1);
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        }

        int value=0;
        for(Integer i:values)
            value+=i;

        return value-number==number;
    }
```

```
public class Decider {
    public static boolean isIt( int number ) {
        if(number<=1) {
            return false;
        }

        List<Integer> values = new ArrayList<Integer>();
        values.add( 1 );
        values.add( number );
.        for( int i = 2; i<Math.sqrt(number); i++ )
            if(  number % i == 0) {
                values.add( i );
                if( number / i !=  i )
                    values.add( number / i );
        }

        int value = 0;
        for( Integer i :values )
            value +=  i;

        // return comparison
        return value-number == number;
    }
}
```

```
public class Decider {
    public static boolean isIt( int number ) {
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        List<Integer> values = new ArrayList<Integer>();
        values.add( 1 );
        values.add( number );
.        for( int i = 2; i<Math.sqrt(number); i++ )
            if(  number % i == 0) {
                values.add( i );
                if( number / i !=  i )
                    values.add( number / i );
        }

        // calc total values
        int total = 0;
        for( Integer value : values ) {
            total += value;
        }

        // return comparison
        return value-number == number;
    }
```

```
public class Decider {
    public static boolean isIt( int number ) {
        if(number<=1) {
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        }

        List<Integer> values = new ArrayList<Integer>();
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.        for( int i = 2; i<Math.sqrt(number); i++ )
            if(  number % i == 0) {
                values.add( i );
                if( number / i !=  i )
                    values.add( number / i );
        }

        // calc total values
        int total = 0;
        for( Integer value : values ) {
            total += value;
        }

        // return comparison
        return value-number == number;
```

```
public class Decider {
    public static boolean isIt( int number ) {
        if(number<=1) {
            return false;
        }

        // create and prepopulate list of values
        List<Integer> values = new ArrayList<Integer>();
        values.add( 1 );
        values.add( number );


        // add more to list of values
        for( int i = 2; i<Math.sqrt(number); i++ )
            if(  number % i == 0) {
                values.add( i );
                if( number / i !=  i )
                    values.add( number / i );
        }

        // calc total values
        int total = 0;
        for( Integer value : values ) {
            total += value;
        }
```

```
public class Decider {
    public static boolean isIt( int number ) {
        if(number<=1) {
            return false;
        }

        // create and prepopulate list of values
        List<Integer> values = new ArrayList<Integer>();
        values.add( 1 );
        values.add( number );

        // add more to list of value
        for( int i = 2; i < Math.sqrt(number); i++ ) {
            if(  number % i == 0) {
                values.add( i );

                if( number / i !=  i )
                    values.add( number / i );
            }
        }

        // calc total values
        int total = 0;
        for( Integer value : values ) {
            total += value;
```

```
public class Decider {
    public static boolean isIt( int number ) {
        if(number<=1) {
            return false;
        }

        // create and prepopulate list of factors
        Set<Integer> factors = new TreeSet<Integer>();
        factors.add( 1 );
        factors.add( number );

        // add more factors to the list
        for( int i = 2; i < Math.sqrt(number); i++ ) {
            if(  number % i == 0) {
                factors.add( i );
            }
        }

        // calc total values
        int total = 0;
        for( Integer value : values ) {
            total += value;
        }

        // return comparison
```

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        // calc total values
        int total = 0;
        for( Integer value : values ) {
            total += value;
        }
```

```
public class Decider {
    public static boolean isIt( int number ) {
        if(number<=1) {
            return false;
        }

        // create and prepopulate list of factors
        Set<Integer> factors = getFactors( number );

        // calc total values
        int total = 0;
        for( Integer value : values ) {
            total += value;
        }

        // return comparison
        return total - number == number;
    }
}
```

```
public class Decider {
    public static boolean isIt( int number ) {
        if(number<=1) {
            return false;
        }

        // get list of factors
        Set<Integer> factors = getFactors( number );

        // get the sum of the factors
        int total = sumFactors( factors );

        // return comparison
        return total-number == number;
    }
}
```

```
public class Decider {
    public static boolean isPerfectNumber( int number ) {
        if(number<=1) {
            return false;
        }

        Set<Integer> factors = getFactors( number );

        int sumOfFactors = sumFactors( factors );

        return sumOfFactors - number == number;
    }
}
```

Hidden Users

Production Support / Operations

QA / Testers

Other Developers

UX Designers, Business Analysts, etc.

Parting thoughts

There is ALWAYS a user experience

Write and test your code as if the person maintaining it is a homicidal maniac who knows where you live.

Questions?

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