



3rd ACM Conference on Recommender Systems

New York City, NY, USA
October 22-25, 2009



Top 10 Lessons Learned Developing, Deploying, and Operating Real-World Recommender Systems

Francisco J. Martin, Strands, Inc

Agenda

About me

About Strands

What's a Recommender?

The Customer's Perspective

Top Lessons Learned

What I would like to learn at RecSys

Questions

About Me



About Me



About Me



About Me



About Me



About Me



About Me



About Me



About Me



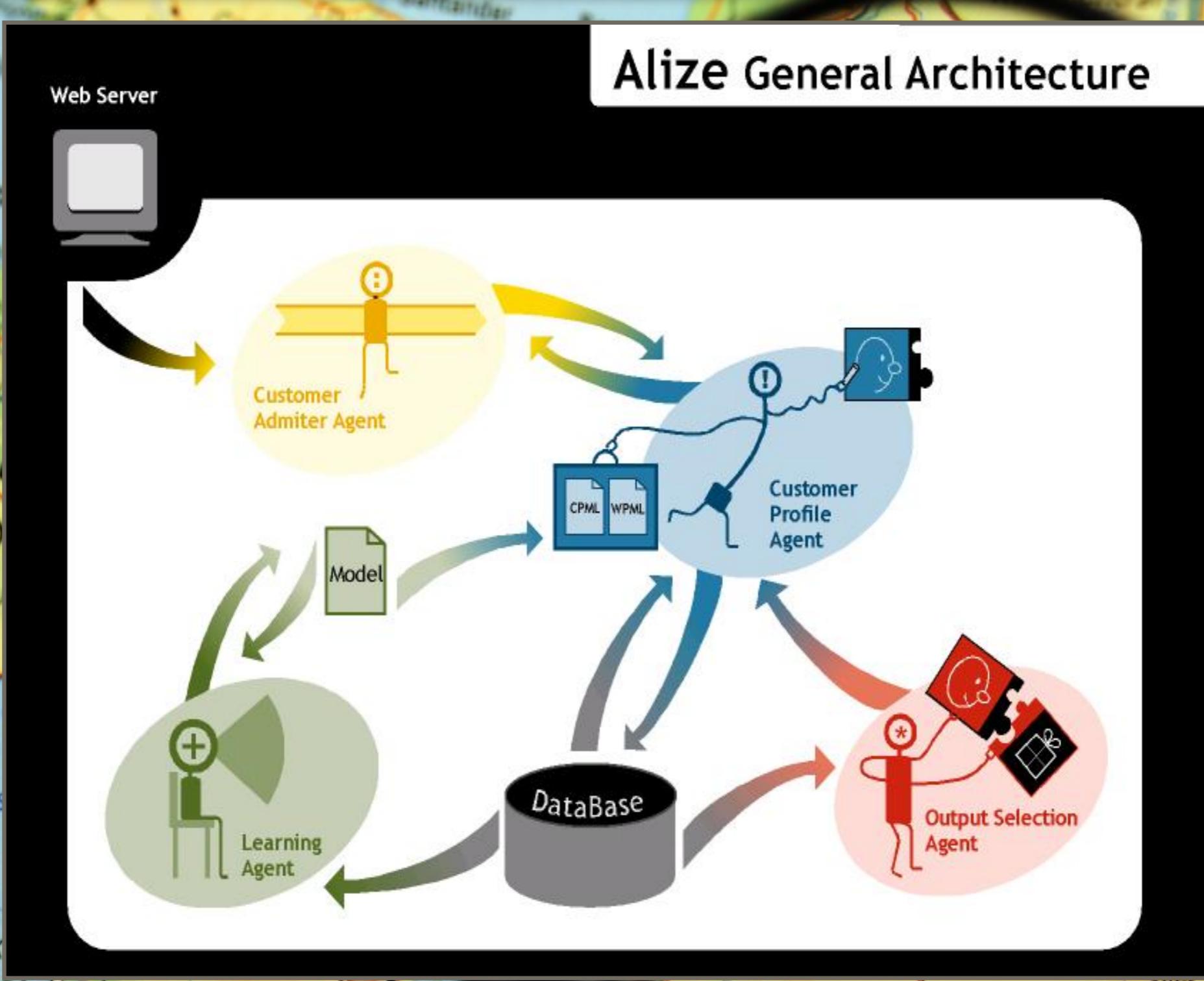
About Me



About Me



About Me



About Me



About Me



About Me



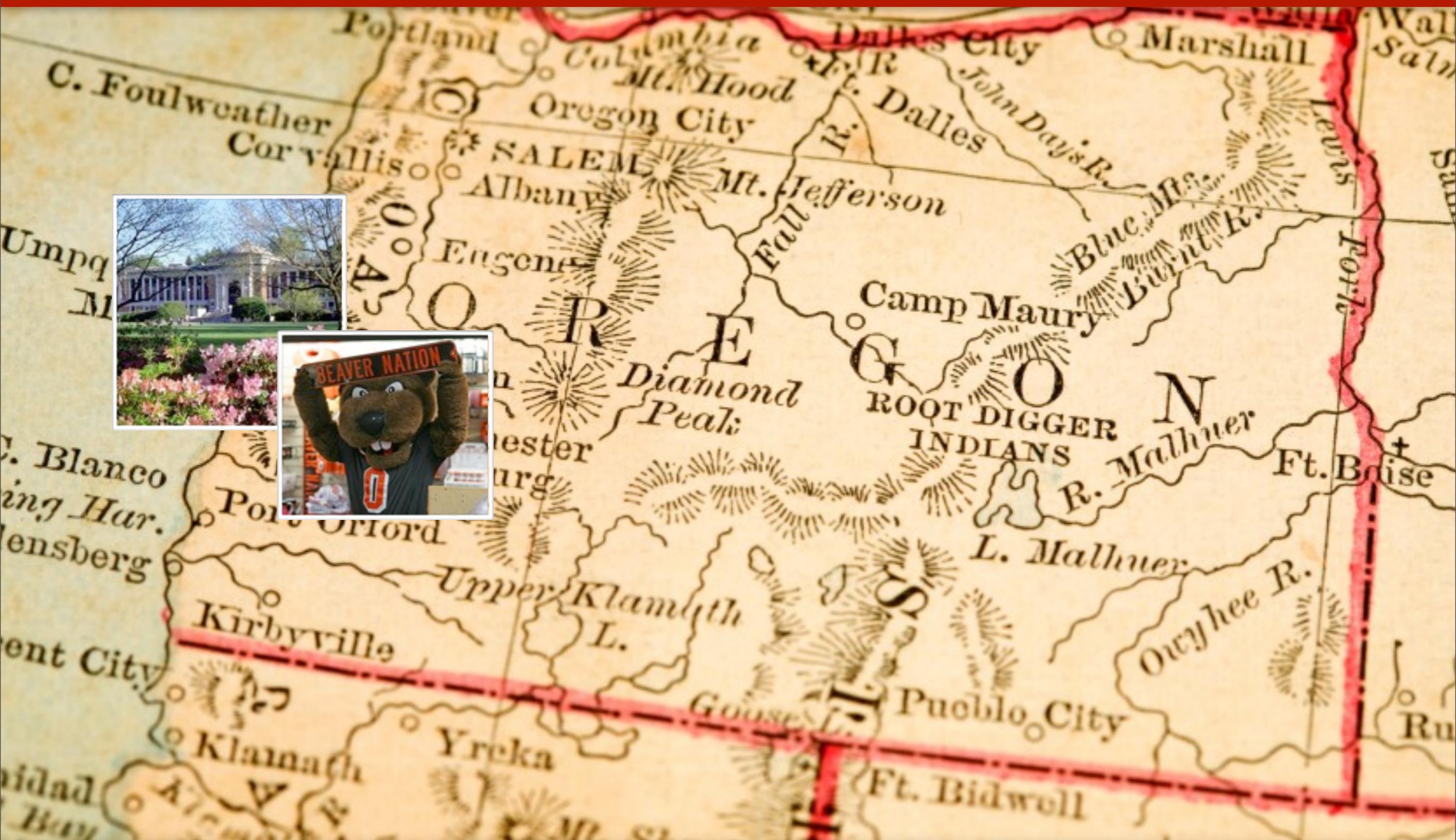
About Me



About Me



About Me



About Me



Agenda

About me

About Strands

What's a Recommender?

The Customer's Perspective

Top Lessons Learned

What I would like to learn at RecSys

Questions

About Strands

Name	Artist	Album	Rating	Play Count	Date Added	Last Played	Genre	Time
Lonely Day	System of a D...	Hypnotize		1421	11/3/07 9:55 PM	10/19/09 ...	Rock	2:48
Superstar	Sonic Youth	Juno (Music from the Motion Picture)		435	1/27/08 11:39 AM	4/29/09 7...	Soundtrack	4:08
The Wrestler	Bruce Springst...	Working On a Dream		388	2/16/09 8:37 PM	10/19/09 ...	Rock	3:51
Answer	Sarah McLachlan	Afterglow		214	2/18/08 9:03 AM	4/29/09 7...	Rock	3:58
Forever Young	Alphaville	Forever Young		127	10/30/07 8:24 PM	4/29/09 8...	Music 80	3:39
The Scientist	Coldplay	A Rush of Blood to the Head		100	10/30/07 8:24 PM	4/29/09 8...	Pop	5:09
Loving Arms	Various Artists	Meeting On Mission Street		58	10/30/07 8:26 PM	4/29/09 8...	R&B	4:05
All the Young Dudes	Mott The Hoople	Juno (Music from the Motion Picture)		52	1/27/08 11:39 AM	10/19/09 ...	Soundtrack	3:35
(I Don't Know Why) But I Do	Clarence "Frog..."	Forrest Gump - The Soundtrack (Sp...		50	11/17/08 6:31 PM	5/7/09 12...	Soundtrack	2:21
Siempre Me Quedará	Bebe	Pafuera Telarañas		44	10/30/07 8:23 PM	10/4/09 4...	Latin	3:50
Serenade	Dover	Devil Came to Me		35	1/27/08 8:14 PM	10/19/09 ...	Pop	3:54
Pardao	Los Suaves	¿Hay Alguien Ahí?		28	1/27/08 11:53 AM	4/29/09 8...	Rock	7:21
Si Pudiera (Live)	Los Suaves	Lo Mejor De ¿Hay Alguien Ahí?		28	1/27/08 11:52 AM	4/29/09 8...	Música latina	5:21
Forever Young	Alphaville	Napoleon Dynamite		27	10/30/07 8:24 PM	4/29/09 8...	Soundtrack	3:39
Ourense-Bosnia	Los Suaves	San Francisco Express	★★★★★	27	1/27/08 11:54 AM	4/29/09 8...	Música latina	9:07
El Sitio De Mi Recreio	Antonio Vega	Básico		23	10/30/07 8:23 PM	10/4/09 1...	Latin	3:16
Faint [Live]	Linkin Park	Live In Texas		23	10/30/07 8:24 PM	10/19/09 ...	Alternative...	2:47
Hurdy Gurdy Man	Donovan	Zodiac (Songs from the Motion Pict...		21	10/30/07 8:24 PM	10/19/09 ...	Soundtrack	3:21
Palabras para Julia	Los Suaves	Vispera de Todos los Santos		19	10/30/07 8:24 PM	4/29/09 9...	Rock	4:55
Against the Wind	Bob Seger & T...	Forrest Gump - The Soundtrack (Sp...		16	11/17/08 6:31 PM	4/29/09 9...	Soundtrack	5:35
Soldadito Marinero	Fito y Fitipaldis	Vivo... Para Contarlo		16	10/30/07 8:24 PM	10/4/09 1...	Latin	7:23
Back in Your Arms	Bruce Springst...	Tracks (Box Set)		15	10/30/07 8:24 PM	10/18/09 ...	Rock	4:39
La Chica De Ayer	Nacha Pop	80 / 88		15	10/30/07 8:25 PM	10/4/09 2...	Latin	4:28
Land of 1000 Dances	Wilson Pickett	Forrest Gump - The Soundtrack (Sp...		15	11/17/08 6:31 PM	5/7/09 1...	Soundtrack	2:25
El garabato de un nino	Antonio Flores			14	10/30/07 8:23 PM	10/4/09 5...		3:34
The Boys And The Babies / Is Cra...	The Drovers	Blink Soundtrack	*	14	10/30/07 8:25 PM	10/19/09 ...	Soundtrack	4:10
In The End	Linkin Park	Hybrid Theory		14	10/30/07 8:24 PM	10/19/09 ...	Alternative...	3:36
Dolores Se Llamaba Lola	Los Suaves	¿Hay Alguien Ahí?		14	1/27/08 11:52 AM	4/29/09 9...	Rock	4:03
Ho Capito Che Ti Amo	Milva	Italian Legends		14	10/30/07 8:24 PM	4/29/09 9...	Pop	2:30

Francisco's
Amazon.comSee All 35
Product Categories

Your Account

Cart | Your Lists | Help |

Your Browsing History | Recommended For You | Rate These Items | Improve Your Recommendations | Your Profile | Learn More

Search Amazon.com

GO



Find Gifts

AOL Web Search

GO

Francisco's Amazon.com™ > Improve Your Recommendations

(If you're not Francisco J. Martin, [click here.](#))

Help us make better recommendations. You can refine your recommendations by rating or unchecking each item.

view: [All items you own](#) | [Not Rated](#)**EDIT YOUR COLLECTION**[Items you own](#) (350)[Items you've rated](#) (0)[Items you've marked](#)["Not interested"](#) (0)**Your Rating:**

1.



[Canon PowerShot SD700 IS 6MP Digital Elph Camera with 4x Image Stabilized Zoom](#)

by Canon

Amazon.com purchase

x|

 Use to make recommendations

2.



[Oregon Wild and Beautiful](#)

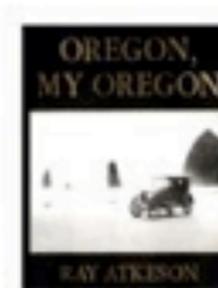
by Fred Pflughoft (Photographer), others (Author)

Amazon.com purchase

x|

 Use to make recommendations

3.



[Oregon, My Oregon](#)

by Ray Atkeson (Author)

Amazon.com purchase

x|

 Use to make recommendations

Getting Started Latest Headlines Lufthansa

amazon.com Prime Francisco's Amazon.com See All 35 Product Categories Your Account | Cart | Your Lists | Help | 

Your Browsing History | Recommended For You | Rate These Items | Improve Your Recommendations | Your Profile | Learn More

Search Amazon.com **GO** Find Gifts  Web Search **GO**

Francisco's Amazon.com™ > Recommended for you

(If you're not Francisco, [click here](#).)

Recommendations by Category

Your Favorites [Edit](#)

[Music](#)

[Toys & Games](#)

[Books](#)

[DVD](#)

[Electronics](#)

[Computers & PC](#)

[Hardware](#)

[Camera & Photo](#)

[Software](#)

More Categories

[Apparel & Accessories](#)

[Baby](#)

[Beauty](#)

[Computer & Video](#)

[Games](#)

[Gourmet Food](#)

[Health & Personal Care](#)

[Industrial & Scientific](#)

[Jewelry & Watches](#)

[Kitchen & Housewares](#)

[Magazine Subscriptions](#)

[Outdoor Living](#)

[Sports & Outdoors](#)

[Tools & Hardware](#)

[Video](#)

[Done](#)

These recommendations are based on [items you own](#) and more.

view: [All](#) | [New Releases](#) | [Coming Soon](#)

[More results](#) 

1.

[OREGON III](#)

RAY ATKESON



[Oregon III](#)

by Ray Atkeson (Photographer), Richard Ross (Author)

Average Customer Review: 

In Stock

Publication Date: June 1, 1987

Our Price: \$22.76 [Used & new](#) from \$0.74

 Add to cart

 Add to Wish List

I Own It Not interested  Rate it

Recommended because you purchased Oregon, My Oregon and more ([edit](#))

2.



[I Might Be Wrong: Live Recordings \[LIVE\]](#)

~ Radiohead

Average Customer Review: 

In Stock

Release Date: November 13, 2001

Our Price: \$9.99 [Used & new](#) from \$5.07 [Club price: \\$7.99](#)

 Add to cart

 Add to Wish List

I Own It Not interested  Rate it

Recommended because you purchased Amnesiac and more ([edit](#))

3.



[802.11 Wireless Networks: The Definitive Guide, Second Edition](#)

by Matthew S Gast (Author)

Average Customer Review: 

In Stock

Publication Date: April 25, 2005

Our Price: \$29.67 [Used & new](#) from \$22.99

 Add to cart

 Add to Wish List

Shop All Departments

Search All Departments

GO

Cart

Your Lists

Francisco's Amazon.com

Your Browsing History

Recommended For You

Rate These Items

Improve Your Recommendations

Your Profile

Your Communities

Learn More

Francisco's Amazon.com > Improve Your Recommendations

(If you're not Francisco J. Martin, click here.)

Help us make better recommendations. You can refine your recommendations by rating items or adjusting the checkboxes.

view: **All items you own** | [Not Rated](#)**EDIT YOUR COLLECTION****Items you own** (554)[Items you've rated](#) (0)[Items you've marked "Not interested"](#) (0)[Items you've marked as gifts](#) (0)**Need Help?**Visit our [help](#) area to learn more.**Your Rating:**

1.

**[Levi® 527 Low Rise Boot Cut in Bandit, Size: 34W x 32L](#)**Levi's
Amazon.com purchase

x|★★★★★

- This was a gift
 Don't use for recommendations

[Your tags:](#) [Add](#) ([What's this?](#))Click to Add: [levis](#), [jeans](#), [womens](#)

2.

**[Levi's® Low Rise Boot Cut 527TM Jeans - Guys' Fit](#)**Levi's
Amazon.com purchase

x|★★★★★

- This was a gift
 Don't use for recommendations

[Your tags:](#) [Add](#) ([What's this?](#))Click to Add: [levis](#), [mens](#)

3.

**[Levi's Jeans, 527 Boot Cut 3d Clouded 34x32](#)**Levi's
Amazon.com purchase

x|★★★★★

- This was a gift
 Don't use for recommendations

[Your tags:](#) [Add](#) ([What's this?](#))Click to Add: [levis](#), [mens](#)

4.

**[Levis® 527 Low Rise Boot Cut in Rigid Broken - Ships in "24"](#)**

Getting Started Latest Headlines Lufthansa

http://www.amazon.co.uk/gp/yourstore/iyr/ref=pd_ys_nav_iyr/026-8564166-0425254

amazon.co.uk

VIEW BASKET | WISH LIST | YOUR ACCOUNT | HELP

WELCOME FRANC... S STORE BOOKS ELECTRONICS & PHOTO MUSIC DVD VIDEO SOFTWARE PC & VIDEO GAMES HOME & GARDEN TOYS & GAMES RENT

IMPROVE YOUR RECOMMENDATIONS PAGE YOU MADE YOUR PROFILE LEARN MORE

QUICKSEARCH All Products GO! BROWSE Books GO!

Improve Your Recommendations

Help us make better recommendations. You can refine your recommendations by rating or unselecting items.

view: [All items you own](#) | [Not Rated](#)

EDIT YOUR COLLECTION

► **Items you own** (165)

[Rated items](#) (0)

[Not Interested](#) (0)

Your Rating:



Use to make recommendations

1.



[Programming PC Connectivity Applications for Symbian OS](#)

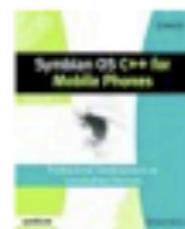
by Ian E. McDowell



Use to make recommendations

Amazon.co.uk purchase

2.



[Symbian OS C++ for Mobile Phones](#)

by Richard Harrison (Author)



Use to make recommendations

Amazon.co.uk purchase

3.



[Symbian OS Explained](#)

by J. Stichbury



Use to make recommendations

Amazon.co.uk purchase

Getting Started Latest Headlines Lufthansa

IMPROVE YOUR RECOMMENDATIONS | PAGE YOU MADE | YOUR PROFILE | LEARN MORE

QUICKSEARCH All Products GO!

BROWSE Books GO!

Recommended for Francisco J. Martin (If you're not Francisco J. Martin, [click here.](#))

Narrow by Event Recommendations for you are based on [items you own](#) and more. [More results](#)

[Page You Made](#)

Narrow by Category

Your Favourites [Change](#)

[Books](#)

[More Categories](#)

[PC & Video Games](#)

[DVD](#)

[Electronics & Photo](#)

[Kitchen & Home](#)

[Music](#)

[Garden & Outdoors](#)

[Software](#)

[DIY & Tools](#)

[Toys & Games](#)

[Video](#)

Improve Your Recommendations

Update your Amazon history to improve your recommendations

[Items you own](#)

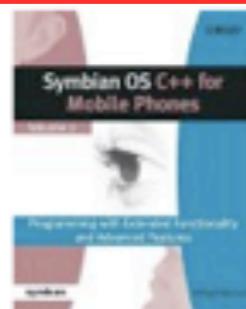
[Rated items](#)

[Not Interested](#)

Need Help?

Visit our [help](#) area to learn more.

view: [All](#) | [New Releases](#) | [Coming Soon](#)

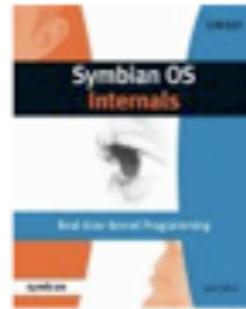
1.  [Symbian OS C++ for Mobile Phones, Volume 2](#)
by Richard Harrison
Publication Date: August 13, 2004

Our Price: £23.09 [Used & new](#) from £17.09

[Add to Basket](#) [Add to Wish List](#)

I Own It Not interested [Rate it](#)

Recommended because you purchased Symbian OS C++ for Mobile Phones and more ([edit](#))

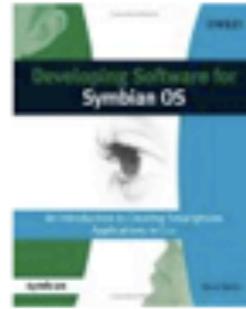
2.  [Symbian OS Internals: Real-time Kernel Programming](#)
by Jane Sales (Author)
Publication Date: October 14, 2005

Our Price: £34.65 [Used & new](#) from £29.02

[Add to Basket](#) [Add to Wish List](#)

I Own It Not interested [Rate it](#)

Recommended because you purchased Symbian for Software Leaders and more ([edit](#))

3.  [Developing Software for Symbian OS: An Introduction to Creating Smartphone Applications in C++](#)
by Steve Babin
Publication Date: October 14, 2005

Our Price: £23.09 [Used & new](#) from £19.61

[Add to Basket](#) [Add to Wish List](#)

I Own It Not interested [Rate it](#)

Recommended because you purchased Symbian for Software Leaders and more ([edit](#))

About Strands

music

03-05



people
videos
music

06-07



everything
training plans
finance
people
videos
music

08-09



About Strands

dcmoneystrands™

Home About Us Mobile Blog Forum Login

Money management made fun and easy

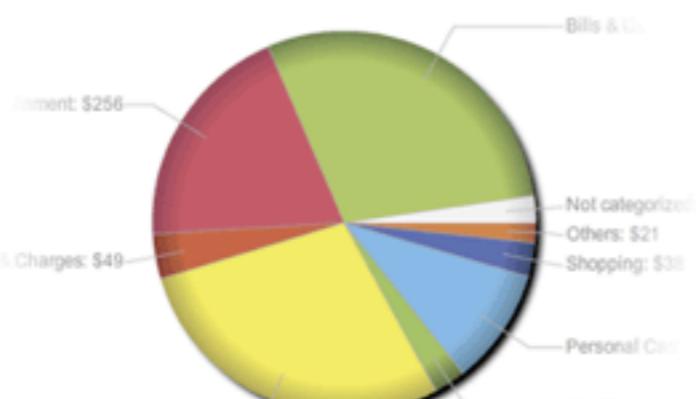
Set up a budget, control your spending, start saving up.
Stay on top of your finances — for FREE.

Sign up now!



"Download my poster and see how moneyStrands helps me put my financial house in order."
Monica

 DOWNLOAD

Easy and effortless money management	Where does your money go?	Your data wherever you go	How do you measure up?	Real savings and recommendations
	<h3>Where does your money go?</h3> <p>Get a clear view of how much you spend eating out, gassing up the car and those guilty pleasures. Then look at your spending trends or drill down into individual categories to see just where all the money you earn goes. Easily define budgets, see projections/alerts to help you follow your plan.</p>			

dcstrands™

3rd ACM Conference on Recommender Systems
New York City :: October 23 2009

About Strands

The screenshot shows the Strands website homepage. At the top, there is a navigation bar with links for 'Home', 'People', 'Events', 'Groups', 'Login', 'Register', and a language selector set to 'English'. A search bar is also present. Below the navigation, a large banner features the text 'FREE TRAINING LOGS FOR ACTIVE PEOPLE' with a 'Register Now' button and a link to 'Race Organizers Registration'. To the right of the banner is a photograph of two people running on a trail. On the left side, there are three profiles: Elva Dryer (2-time Olympian '00 & '04), Mike Reneau (Team Strands - 2:16 Marathoner), and Marian Brooks Pyles (Professional Distance Runner). Each profile includes a small photo and a brief description. At the bottom right of the main content area is a button for the 'App Store'. The overall design is clean and modern, with a blue and white color scheme.

About Strands

SIGN UP | LOGIN | CONTACT US

strands
recommender

SOLUTIONS TECHNOLOGY PRICING CUSTOMERS NEWS & EVENTS BLOG COMPANY

Personalize your customer's experience from start to finish

Social Media Customers ►

eCommerce Customers ►

Recent news

17/05/2008 Product Recommendation Engines Improve Customer Experiences

21/06/2009 Practicalecommerce.com: Cart of the Week: Beanbasket

13/07/2009 Internetretailer.com: A little personalization goes a long way

Technology benefits

- Quick Implementation
- Cost Effective
- Reliable Service
- Fully Customizable
- 24 / 7 Support

Learn more »

Download Case Study

View Pricing



strands™ recommender

TRAVELSMITH



DISCOUNT DANCE SUPPLY



COSTUMES INC.



LUGGAGEPOINT.com
Over 200 brands to get you going!



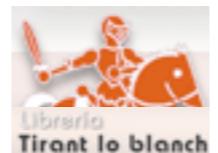
Marley Sporting Dog Supplies
(800) 228-3116



McGrawHill Professional



Vino Gusto



About Strands

COSTUMES INC.

YOUR CHOICE FOR COSTUMES & ACCESSORIES FOR HALLOWEEN OR ANY OCCASION

enter search term

items \$0.00

home Halloween Costumes Movie Costumes specials customer scr costume blog order status

 **Halloween Costume Savings!! Spend \$65 TAKE \$5 OFF - \$100 TAKE \$10 OFF - \$150 TAKE \$15 OFF.** Not valid with other discount programs.

BOOKMARK 

Shop by Category

Home > Themes > 60's, 70's & 80's

Adult Costumes
Kids Costumes
Plus Size Costumes
Teen Costumes
Accessories and Make-up
Pet Costumes
Costume Effects
Costume Hats
Costume Masks
Costume Wigs
Props & Decorations
Wing & Things

Shop by Theme

70's Costumes
Sexy Vampire Costumes
Superhero Costumes
Sexy Costumes
50's Costumes
60's, 70's & 80's Costumes
80's Costumes


Mouse over image to zoom

Far Out Dude Costume - Teen Boy's Hippe Character Costume
ID #: 62000 Vendor: FORUM NOVELTIES
IN STOCK TODAY!

Your price: \$27.99
Retail price: \$32.99

Qty:

Select Size:

 size chart

(Far Out Dude Costume - Teen Hippe Character Costume includes headband shirt & pants)

[Accessorize this costume](#)
See below by clicking here: 

Total Selected: \$27.99

 currency converter

 email a friend

Related Products:
Select from one of the available tabs below. Click on a thumbnail to view a larger image.

[Accessories](#) [Wigs & Hats](#)


Skeleton Costume - Teen Skeleton Costume
\$25.79


Jail Bird Costume - Teen Prisoner Costume
\$50.49

Agenda

About me

About Strands

What's a Recommender?

The Customer's Perspective

Top Lessons Learned

What I would like to learn at RecSys

Questions

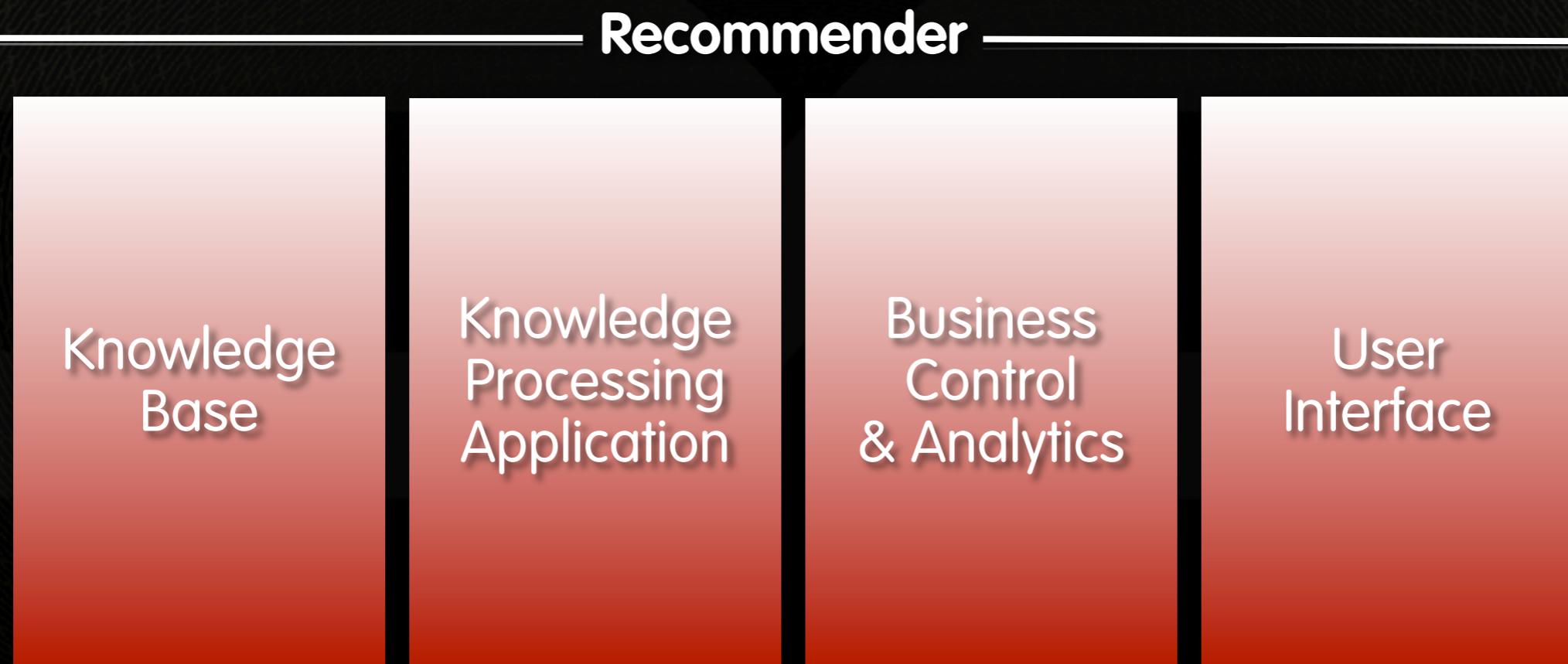
What's a Recommender?



A Recommender selects the product that if acquired by the buyer maximizes value of both buyer and seller at a given point in time

What's a Recommender?

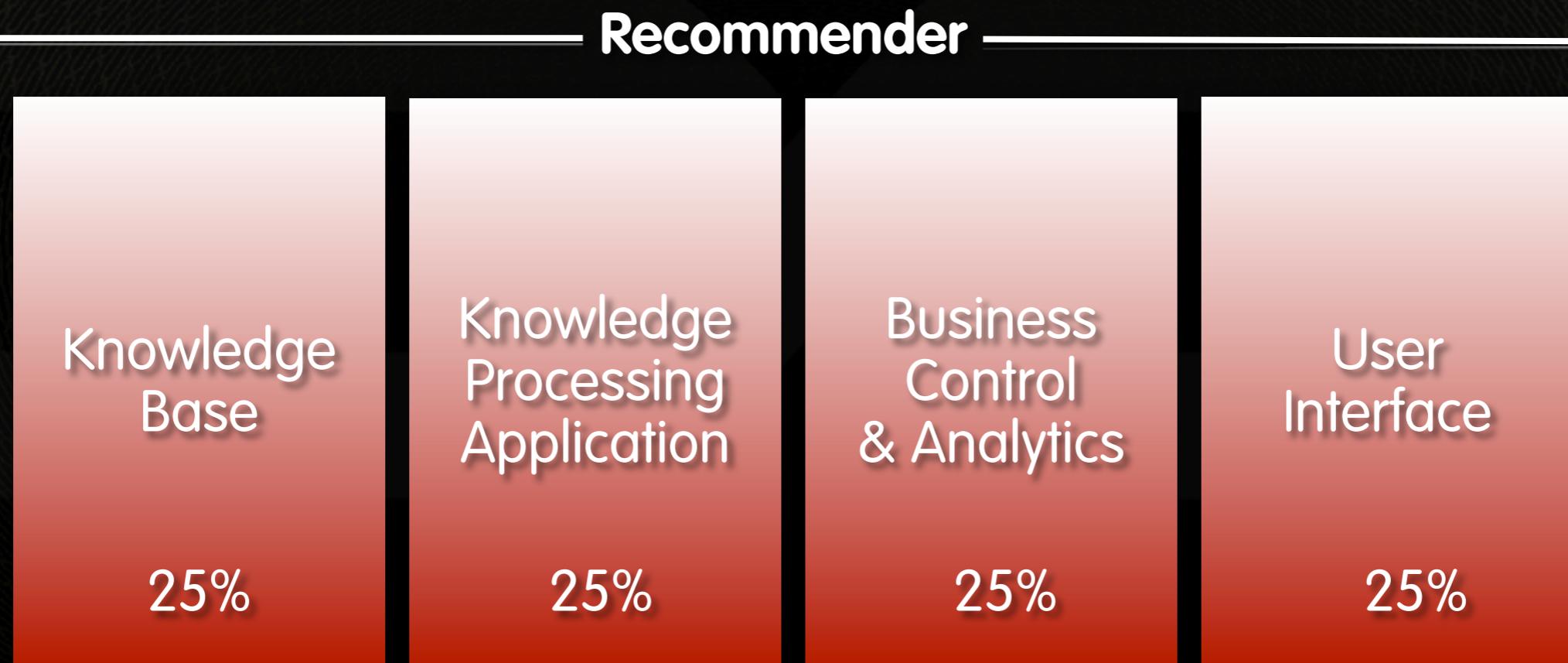
A Recommender **processes information** and transforms it into **actionable knowledge**



It has certain level of **autonomy** presenting recommendations to end users

What's a Recommender?

A Recommender **processes information** and transforms it into **actionable knowledge**



It has certain level of **autonomy** presenting recommendations to end users

Agenda

About me

About Strands

What's a Recommender?

The Customer's Perspective

Top Lessons Learned

What I would like to learn at RecSys

Questions

The Customer's Perspective



1. Do I need a Recommender?
2. How do I get one?
3. Is it performing well?
4. Was it a good idea after all?

Agenda

About me

About Strands

What's a Recommender?

The Customer's Perspective

Top Lessons Learned

What I would like to learn at RecSys

Questions

Lesson 1

Make sure a
Recommender is
really needed!





Lesson 1: Make sure a Recommender is really needed!

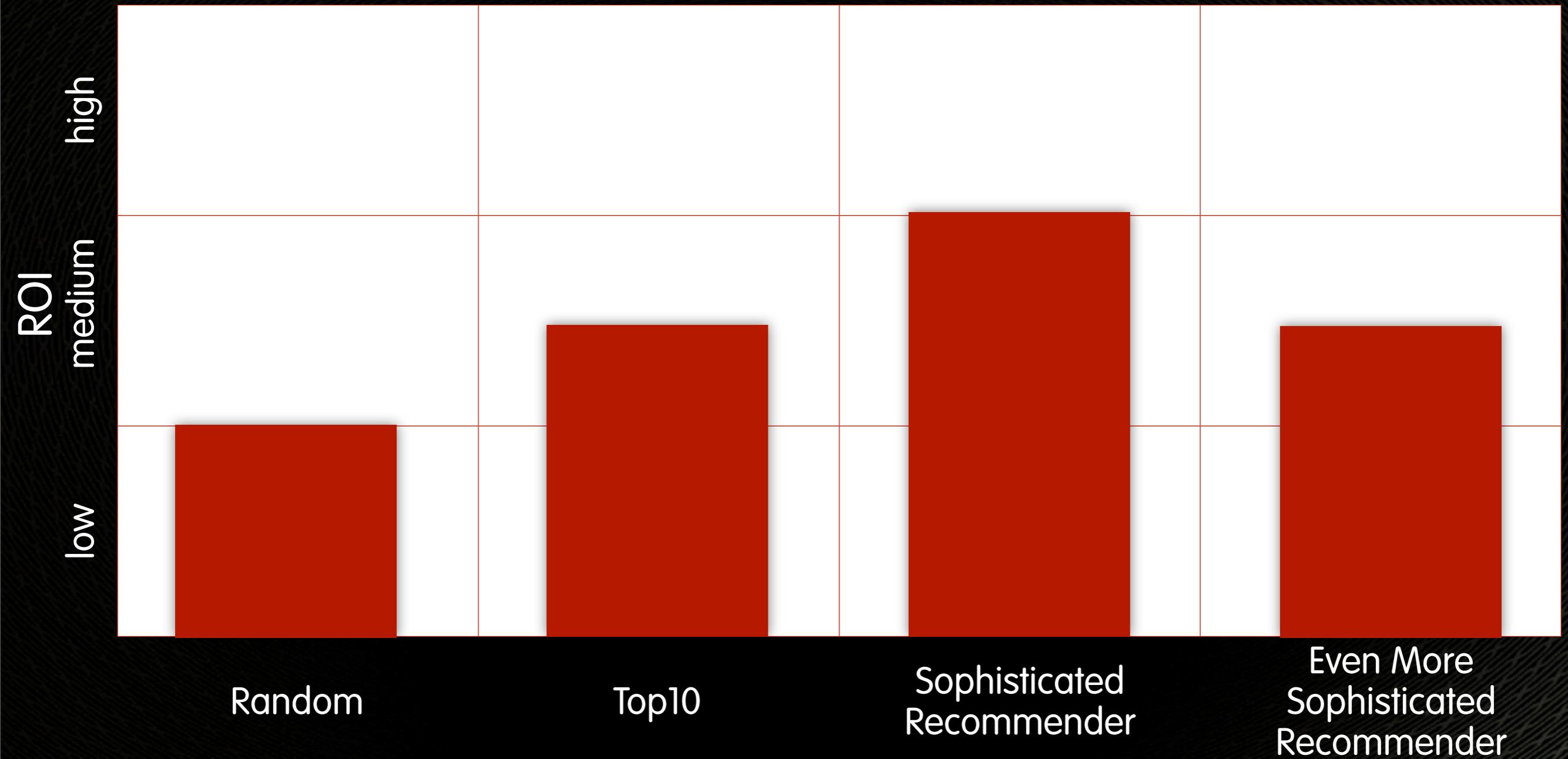


Lesson 1: Make sure a Recommender is really needed!

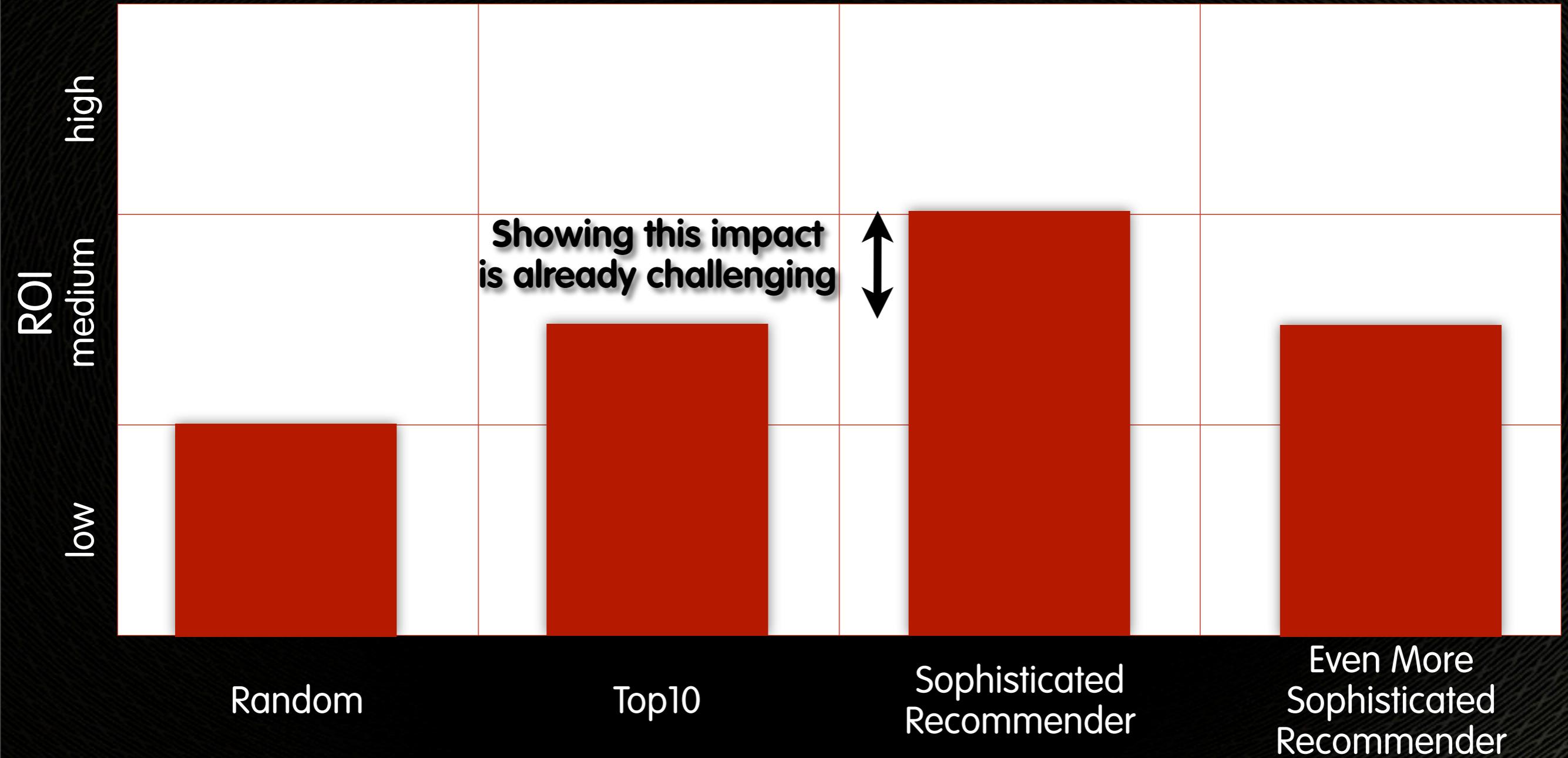
000s

both in products and customers

Lesson 1: Make sure a Recommender is really needed!



Lesson 1: Make sure a Recommender is really needed!



Lesson 2

Recommendations
must make “strategic”
sense

Lesson 2: Recommendations must make “strategic” sense



Is the best recommendation for the customer the best recommendation for the business?

Lesson 2: Recommendations must make “strategic” sense

From the consumer's perspective:

- There's a difference between good recommendations and useful recommendations
- The recommendations with highest probability of being correct are often too obvious to be useful
- Better to get riskier recommendations that I have less chance of already knowing

Lesson 2: Recommendations must make “strategic” sense

From the business perspective:

Short-term gain vs long term return

Lesson 2: Recommendations must make “strategic” sense

Is long term customer financial well-being more important than short-term revenue gains for the bank?

Good

customer financial health

Okay products to recommend



Best products to recommend



Never Recommend

Bad

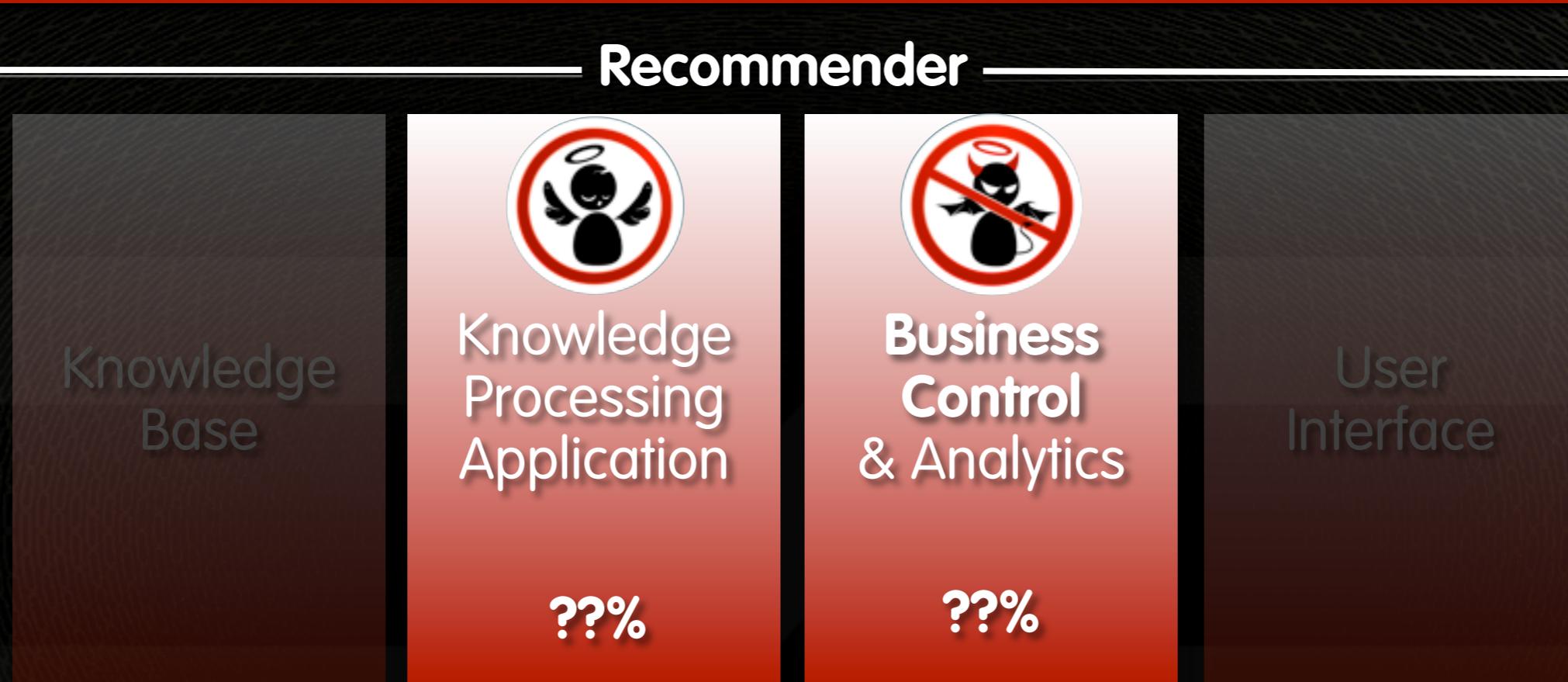
Bank Revenue

Good

Lesson 2: Recommendations must make “strategic” sense

- How much business logic goes into Recommender?
- What's the right level of autonomy a recommender must have?
- How can the business control (i.e., tune/influence/tweak/configure) recommendations?

Lesson 2: Recommendations must make “strategic” sense



Lesson 2: Recommendations must make “strategic” sense

Rules			
Apply	Rule name	Global/Local	Description
<input type="checkbox"/>	remove closeout	Global	Apply when the item is tagged with % OFF. Only recommend items
<input type="checkbox"/>	Same Product Type	Local	Apply always. Only recommend items with the property producttypeequal to \${item.property.producttype}
<input type="checkbox"/>	Accessories	Local	Apply always. Only recommend items with the property producttypeequal to CAC,AC,WG,WP,HT,TF
<input type="checkbox"/>	Do Not Show accessories	Local	Apply when the property producttype is AC. Only recommend items with the property producttypedifferent of AC
<input type="checkbox"/>	access and makeup	Local	Apply always. Only recommend items with the property producttypeequal to CAC,AC,WP
<input type="checkbox"/>	wigshats	Local	Apply always. Only recommend items with the property producttypeequal to WG,HT
<input type="checkbox"/>	wings	Local	Apply always. Only recommend items with the property producttypeequal to PT
<input type="checkbox"/>	MakeupSpecialFx	Local	Apply always. Only recommend items with the property producttypeequal to MK,FX,TF
<input type="checkbox"/>	props	Local	Apply always. Only recommend items with the property producttypeequal to PP,WP,MH
<input type="checkbox"/>	Related	Local	Apply always. Only recommend items with the property producttypeequal to \${user.property.producttype}
<input type="checkbox"/>	pets	Local	Apply always. Only recommend items with the property producttypeequal to PT
<input type="checkbox"/>	upsell	Local	Apply always. Only recommend items
<input type="checkbox"/>	Same Product type	Local	Apply always. Only recommend items with the property producttypeequal to \${item.property.producttype}
<input type="checkbox"/>	same style	Local	Apply always. Recommend giving high priority to items with the property categoryequal to \${item.property.category}
<input type="checkbox"/>	Xrated hide	Global	Apply always. Only recommend items with the property xratedequal to 0
<input type="checkbox"/>	show no out of stock	Global	Apply always. Only recommend items with the property instockequal to yes
<input type="checkbox"/>	Threshold visited more than 4	Local	Apply always.
<input type="checkbox"/>	show no weapons	Local	Apply always. Only recommend items with the property producttypedifferent of WP

Apply

Ruling Recommendations out

The Customer Perspective



1. Do I need a Recommender?
2. How do I get one?
3. Is it performing well?
4. Was it a good idea after all?

Lesson 3

Choose the right
partner!

Lesson 3: Choose the right partner

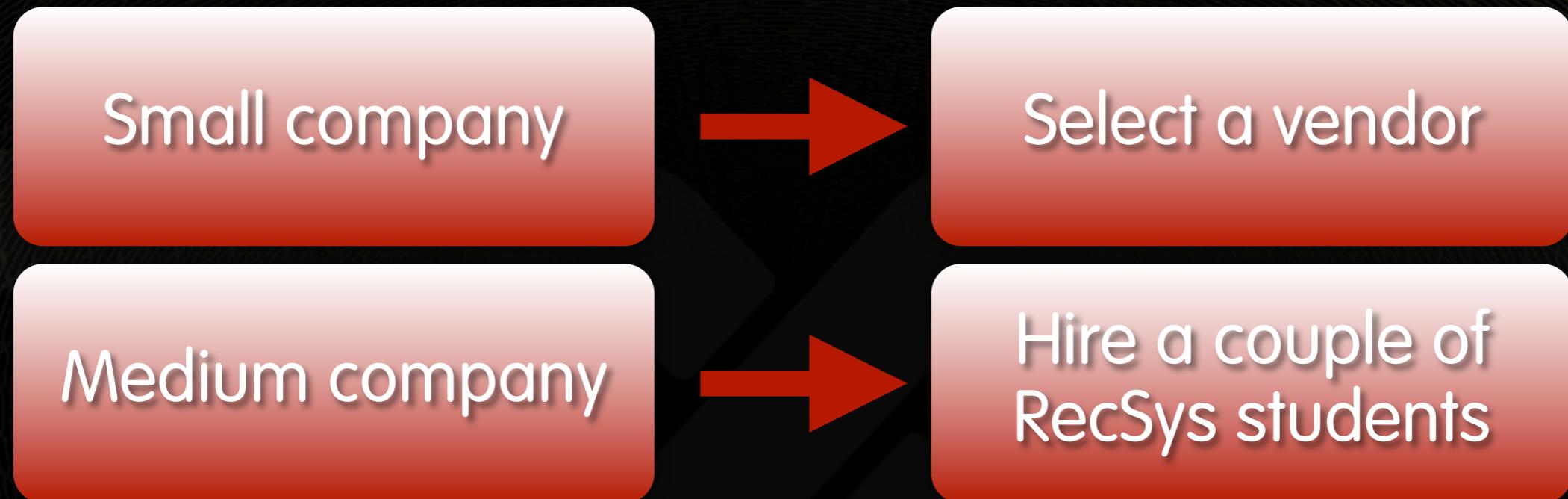
Lesson 3: Choose the right partner

Small company

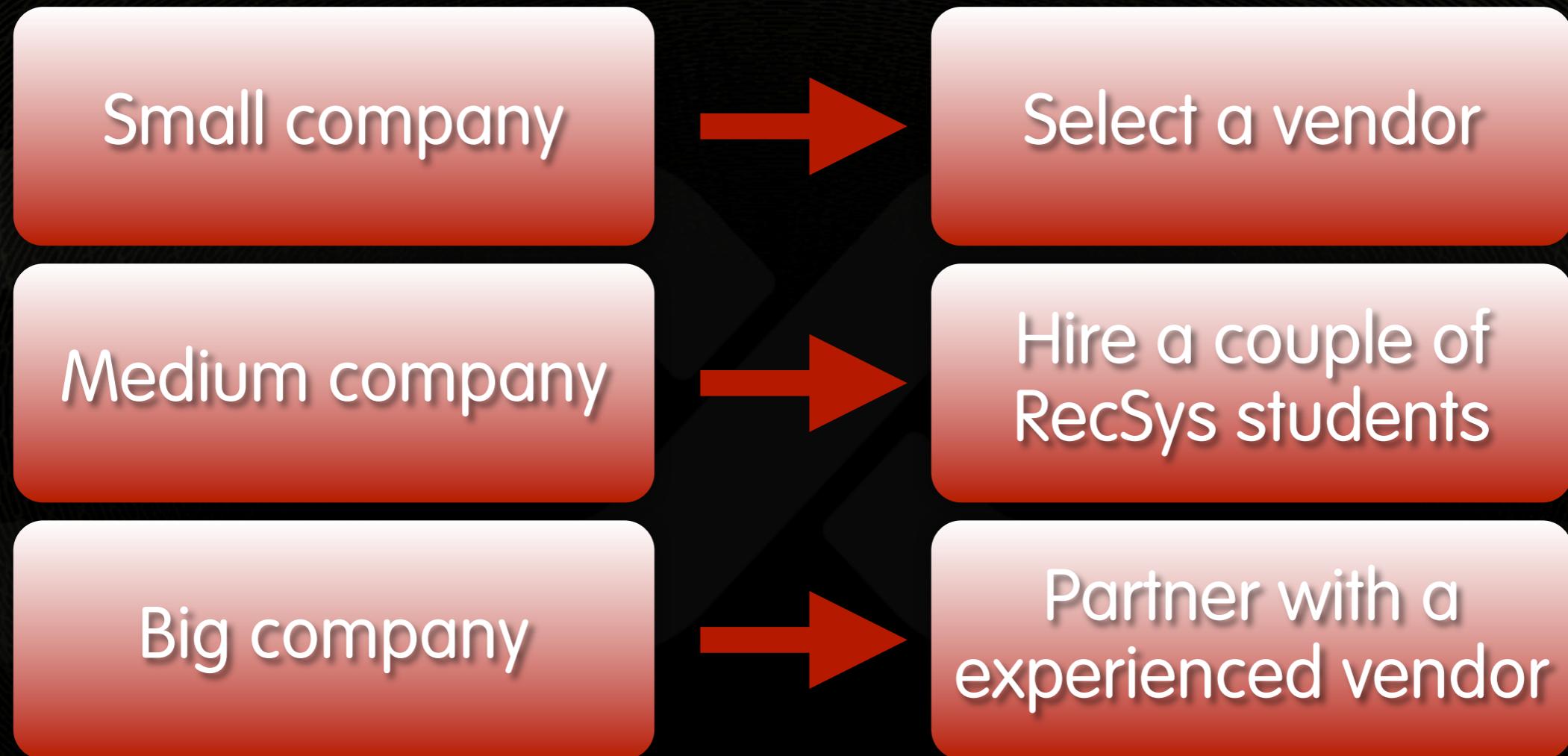


Select a vendor

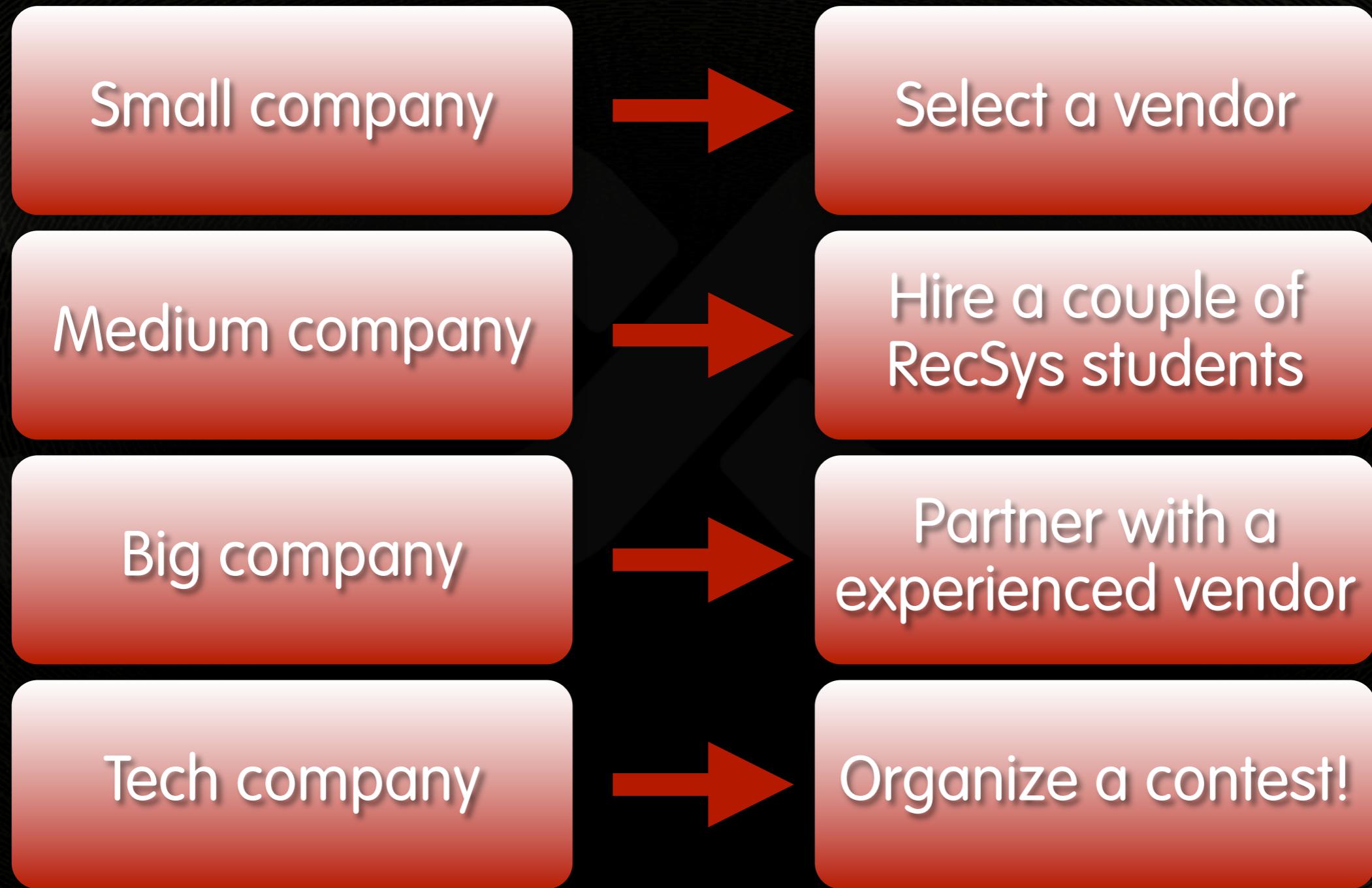
Lesson 3: Choose the right partner



Lesson 3: Choose the right partner



Lesson 3: Choose the right partner



Lesson 3: Choose the right partner

The 2009 GitHub Contest

contest.github

The 2009 GitHub Contest

The 2009 GitHub contest is now officially over! We would like to thank everyone that entered the contest - it was a lot of fun, produced a huge number of really amazing open source recommendation engine projects in several languages and helped get developers who are interested in this space to meet each other and compete in a fun environment.

The Results

Here are some of the projects that entered the contest and have open source code available on GitHub. If you participated in the contest and want your project listed here, please add your source code to your project and then email me (scott at github). It would be great if you describe your approach in your README, too.

Project	Lang	License	Notes
hinky/hinky_ensemble	C++		
jeremybarnes/github_contest	C++	AGPL	Great README
ultraist/github-contest2009	Perl	MIT	
tensor/contest	Python/C++		
cardmagic/github-contest	Ruby		
jbrownlee/github-contest	Ruby/ObjC		
icaltereo/gh-contest	Python	MIT	Read more - description_papers
cloudhead/github-recommend	C		
ykt/recommendation	Ruby		
ultraist/github-test	Perl	Public Domain	
swies/pappy	Python		
talison/ghc09	Python	MIT	Uses Tokyo Cabinet, good README
browning/gilliat	C#		
MarkLodato/gh-contest	Python		Great README
blackskad/github-contest	Vala	GPL2	More on Vala
asciarmor/gh_contest	Python		More at his blog post
jbowes/gh-contest	Python		
willbailey/contest09	Ruby		
zorab47/github-contest	Ruby		
nnydrum/github-contest-java	Java	Apache	For Ruby version, see here

Netflix Prize: Home

NETFLIX

Netflix Prize

COMPLETED

Congratulations!

The Netflix Prize sought to substantially improve the accuracy of predictions about how much someone is going to enjoy a movie based on their movie preferences. On September 21, 2009 we awarded the \$1M Grand Prize to team 'Bellkor's Pragmatic Chaos'. Read about their [algorithm](#), checkout team scores on the [Leaderboard](#), and join the discussions on the [Forum](#). We applaud all the contributors to this quest, which improves our ability to connect people to the movies they love. Stay tuned for details of the next contest, [Netflix Prize 2](#).

strands™ \$100,000 Call for Recommender Start-Ups

The Fastest Path to Fund your Project

- 1 Submit your project
- 2 Present at RecSys08
- 3 Get funded

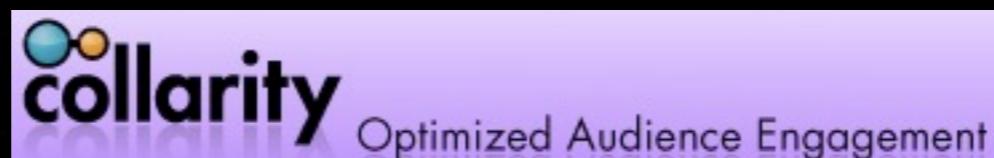
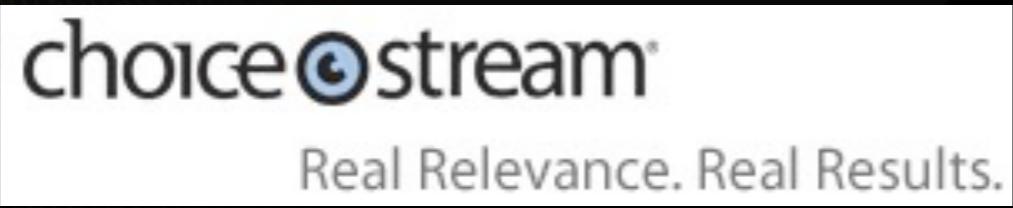
The Call seeks to identify the best early stage project in the area of recommendation technologies

<http://recommender-startups.strands.com>

Lesson 3: Choose the right partner



Lesson 3: Choose the right partner



Lesson 3: Choose the right partner

1. Choose your Plan

Select from the three flexible pricing plans below and you will be on your way to adding recommendations quickly and cost effectively. There are no upfront fees or negotiations necessary.

Starter	Standard	Premium
\$99 month	\$249 month	<i>Recommended for Experienced Merchants with over \$5M in annual revenue</i>
<i>Recommendations Types</i>		

Lesson 4

Forget about cold-start problems, just
be creative



With the advent of the Internet
the start for a Recommender
isn't so cold anymore

Lesson 5

Keep the right
balance between
data and algorithms

Lesson 5: Keep the right balance between data and algorithms



```
"#pragma once  
#endif // _MSC_VER > 1000  
#ifndef __AFXWIN_H__  
#error include 'stdafx.h' before including this file  
#include "resource.h" // main resource  
// CDMotionApp:  
// See DMotion.cpp for the implementation of this class  
class CDMotionApp : public COffApp  
{  
public:  
    CDMotionApp();  
    // Overrides  
    // ClassWizard generated virtual function overrides  
    //{{AFX_VIRTUAL(CMotionApp)  
    public:  
        virtual BOOL InitInstance();  
    }}AFX_VIRTUAL;  
  
    // Implementation  
    //{{AFX_MSG(CMotionApp)  
    afx_msg void OnAppAbout();  
    // NOTE - the ClassWizard will add  
    // DO NOT EDIT what is below!  
    //{{AFX_MSG_END(CMotionApp)  
};
```



Is the quantity or quality of the ingredients what make a difference or is it the recipes?

Lesson 5: Keep the right balance between data and algorithms



Is the quantity or quality of the ingredients what make a difference or is it the recipes?

Lesson 5: Keep the right balance between data and algorithms

Good

Data Quantity & Quality



Bad

Algorithm Performance

Good

Lesson 5: Keep the right balance between data and algorithms

Recommender -

Knowledge Base

70%

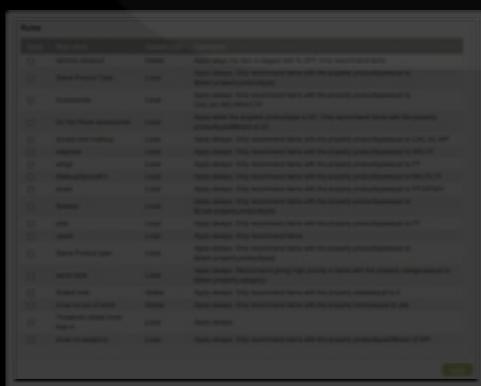


Knowledge Processing Application

30%



Business Control & Analytics



Lesson 6

Finding correlated items is easy, deciding what, how, and when to present to the user is hard

Lesson 6: ...what, how, and when to present to the user is hard

- Don't make recommendations for recommendations sake
- Which part of the user history/preferences should be used and when?
- What proportion of the things the user sees/evaluates/buys are shown by the recommender?

Lesson 6: ...what, how, and when to present to the user is hard

1 Personalized landing page

Welcome back

Recommendations for you

2 Product page up-sell

3 Check out page cross-sell

4 Personalized email / newsletter

The four following areas have been found to increase sales and conversion by 3-12%

Lesson 6: ...what, how, and when to present to the user is hard

Recommender

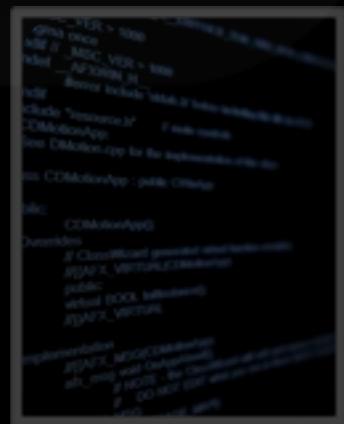
Knowledge
Base

??%



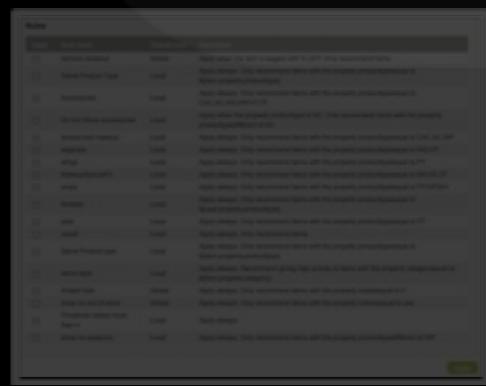
Knowledge
Processing
Application

??%



Business
Control
& Analytics

??%



User
Interface

50%



Lesson 7

Don't waste time
calculating nearest
neighbors

Lesson 7: Don't waste time calculating nearest neighbors

A screenshot of a web browser displaying the Strands website. The URL is <http://www.strands.com/aficionado>. The page shows a user's activity feed under the heading "aficionado's Activity". It includes sections for "Following", "Most Followed", "Everywhere", and "All". On the left, there is a sidebar with categories: Exercise, Health, Media, People, and All Categories. A large silhouette of a runner is on the left side of the page. The main content area shows a grid of profile pictures and names of people followed by the user.

A screenshot of the TwitterPoster application. The title bar says "twitter poster Beta". The main area is a large grid of small user profile pictures. Overlaid on the grid are several pieces of information: "9°C" and "Corvallis October 21, 2009 Feels like: 8°C Wind: S at 9.66 kph Humidity: 87% Tomorrow: 17°C 8°C". Below this is a "Race Prediction" box for a "Half-Marathon" with a progress bar and the text "your time would be: 1:25:45". To the right of the grid, there is a "Followers" section with a grid of profile pictures and a "Following" section with a grid of profile pictures. At the bottom, there is a message: "TwitterPoster is a visual application based on Twitter API. It provides a visual representation of the degree of influence of the Twitter users. More... The size, 24x24, 48x48 and 2x72 pixels, is set based on the number of followers of each user. Welcome to TwitterPoster United Kingdom: http://twitterposter.com/uk. Last update: 21 October 2009".

Lesson 8

Don't wait too long
to get ready to scale!

Lesson 3: Don't wait too long to get ready to scale

When is the right time?



Lesson 3: Don't wait too long to get ready to scale

- If you do too soon and recommendations don't take off...
- If you do too late and recommendations do take off...

Lesson 3: Don't wait too long to get ready to scale

Scaling isn't such a hard problem when recommendations are delegated to a vendor/partner



Lesson 9

Choose the right
feedback
mechanism!





Lesson 9: Choose the right feedback mechanism

TechCrunch

About Advertise Archives Company Index Contact CrunchCam Jobs Research

YouTube Comes To A 5-Star Realization: Its Ratings Are Useless

by MG Siegler on September 22, 2009

82 Comments 359 retweet Share

x	y
1	0.8
2	0.7
3	0.6
4	0.5
5	0.9

Lesson 9: Choose the right feedback mechanism

- Are ratings the essence of the recommender algorithm or only a way to improve the recommendations?
- Implicit Ratings vs Explicit Ratings
- Implicit Semantics vs Explicit Semantic of Ratings

Lesson 9: Choose the right feedback mechanism

WHAT TO BUY

Based on your spending patterns and that of users with similar financial profiles we think you might be interested in this product:

KINDLE DX: AMAZON'S 9.7" WIRELESS READING DEVICE (LATEST GENERATION)

\$489.00

kindle DX
Wireless reading just got bigger.

Get more information

☆ ☻ ☺ ☹ ☻

blippr™ good reviews come in small packages

U2 - No Line On The Horizon [more music]

=) dannymegan liked it
why don't u want any one yet.

=) pirateradio disliked it
You don't know how ordinary.. You don't know how ordinary you are. You don't know, you don't get it, do you?

I love it! =D I like it =) I dislike it =| I hate it! =(

Fans Are Saying

Fan Meter (186 ratings):

Read All Reviews (524)

Haven't seen it? Add to the buzz:

DON'T CARE CAN'T WAIT

FANDANGO

My Five Word Review
Write just five words to describe the movie.

Got more to say? Write a full review instead.

SUBMIT

Lesson 9: Choose the right feedback mechanism

The Perfect Rating System

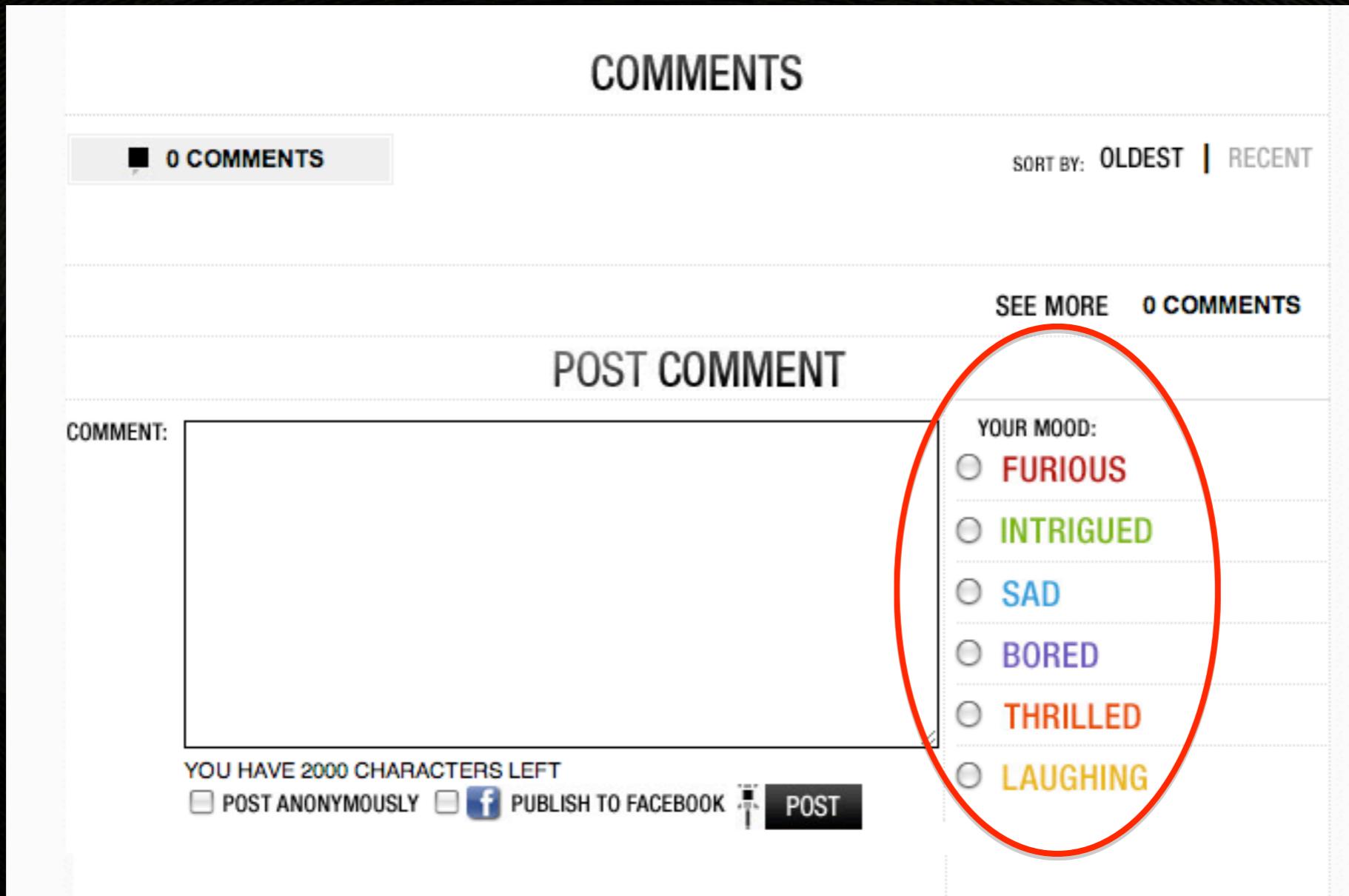


actions

- I have it (i knew it, i saw it)
- my friend▼ has it (knew it, saw it)
- Show it to me later
- Don't show it any more

*optional but it helps to confirm some implicit actions

Lesson 9: Choose the right feedback mechanism



REGISTER | LOG IN



BAY AREA

Locals are *sad* about the Sac State dorm beating victim

NEWS

ENTERTAINMENT

AROUND TOWN

VIDEO

SOUND OFF

Se



As California's largest company, energy isn't the only thing we develop. We also help create nearly 70,000 jobs in California. Putting ideas to work and billions in our economy. [Learn more >](#)

NEWS | LOCAL BEAT

Whale, 7 Stories Long, Beaches on Coast

Updated 12:47 PM PDT, Thu, Oct 22, 2009

[PRINT](#) [EMAIL](#) [SHARE](#) [BUZZ UP!](#) [TWITTER](#) [FACEBOOK](#)



AP

A 70-foot, female blue whale that officials believe was struck by a ship has washed ashore on the Northern California coast in what scientists are calling a rare occurrence.

The find is sure to draw spectators as the experts try to figure out what to do with the creature.

"This is a big deal," said Thor Holmes, curator of the vertebrate museum at Humboldt State University and a member of the California Marine

Locals Are...

73%
SAD

10%
INTRIGUED

7%
THRILLED

5%
LAUGHING

2%
FURIOUS

2%
BORED

Lesson 6: ...what, how, and when to present to the user is hard

Recommender

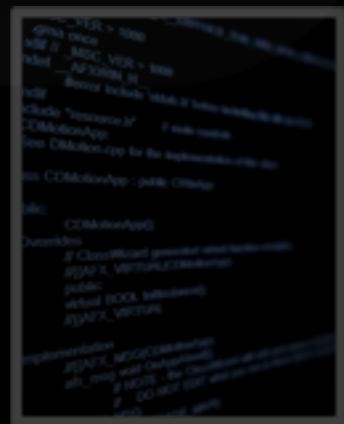
Knowledge
Base

??%



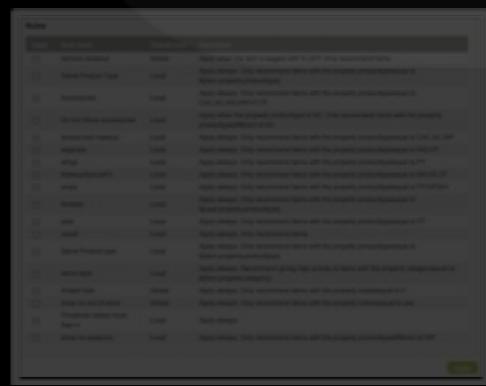
Knowledge
Processing
Application

??%



Business
Control
& Analytics

??%



User
Interface

50%



The Customer's Perspective



1. Do I need a Recommender?
2. How do I get one?
3. Is it performing well?
4. Was it a good idea after all?

Lesson 10

Measure everything



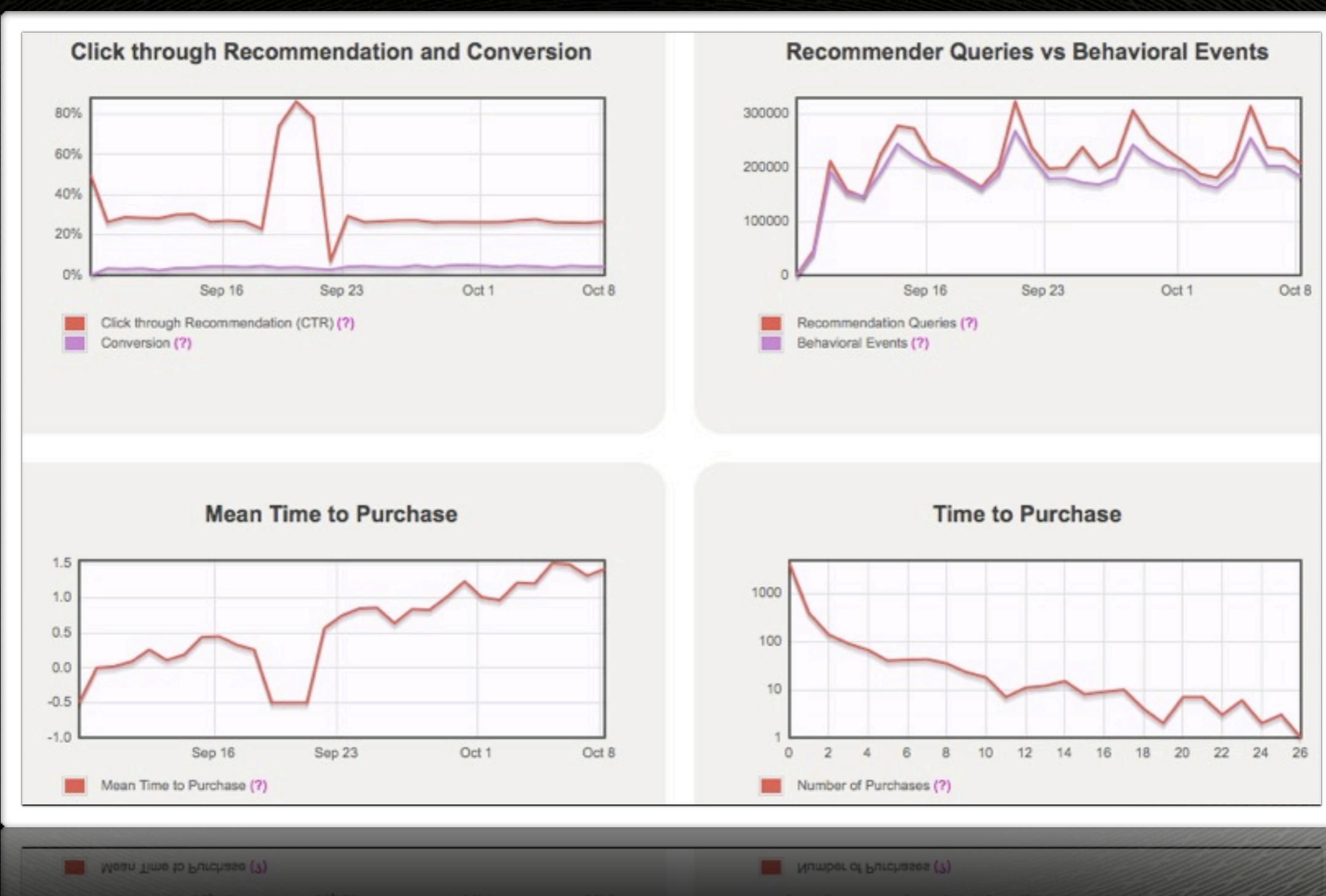
Lesson 10: Measure everything

Recommended Purchases for Oct 08, 2009						
User	Rec. Date	Purchased Time	Product	Product Name	Price	Quantity
784960b4-3e98-...	Oct 08, 2009 - 19:08:27	19:43:00	10261	Dunlop D402 Ha...	135.99	1
4ce284db-34c0-...	Oct 08, 2009 - 13:00:07	13:39:09	10322	Bridgestone G7...	80.99	1
29f6a48b-6915-...	Oct 08, 2009 - 18:23:45	19:35:24	10326	Tour Master Sy...	139.99	1
09a6aaec-2f10-...	Oct 08, 2009 - 18:02:48	18:17:22	10482	Icon Super Dut...	120.00	1
38272883-33a9-...	Oct 08, 2009 - 05:11:19	05:32:01	10687	AFX FX-18 Skul...	130.99	1
c848b04c-ef68-...	Oct 08, 2009 - 13:45:30	14:25:50	10722	Alpinestars GP...	6.00	1
c3905b74-7133-...	Sep 16, 2009 - 14:37:03	17:31:05	10863	Firstgear Silv...	15.99	1
0069b0a5-4ac4-...	Sep 21, 2009 - 14:49:11	13:44:22	10879	Firstgear Wome...	139.99	1
d3b50f95-60db-...	Oct 08, 2009 - 18:30:20	18:35:58	10884	Firstgear Heat...	116.99	1
a86c41e0-0837-...	Oct 08, 2009 - 14:37:11	14:39:34	10914	Firstgear Wome...	31.99	1

210 Total, 1 of 21 page(s)
 ◀ ▶ 1 2 3 4 5 ▶ ▶

(several rows of data from the previous table repeated here)						
...
...
...

Lesson 10: Measure everything



(?) [seeチュウルガセミトニノム](#)

(?) [セイチュウルガセミトニノム](#)

Lesson 10: Measure everything

Statistics from Sep 08, 2009 to Oct 08, 2009

1W 1M 3M 6M 1Y Custom period Raw data

Total Revenue: \$4,501,523.54 Revenue from Recs.: \$310,163.37 (6.89%) CTR: 41.09% Conversion: 4.42% Rec. AOV: \$66.29

Revenue From Recommendations (%)



AOV, AOVR and Recommendation AOV



Lesson 10: Measure everything

Recommender

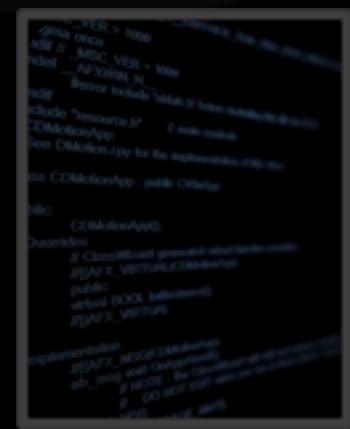
Knowledge
Base

??%



Knowledge
Processing
Application

??%



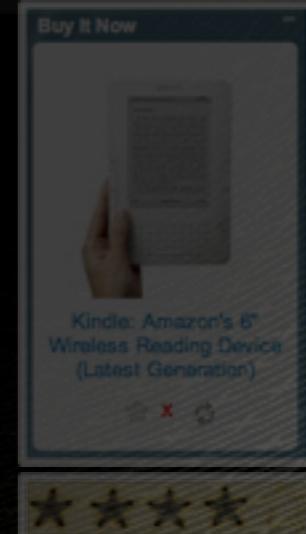
Business
Control
& Analytics

??%



User
Interface

??%



Agenda

About me

About Strands

What's a Recommender?

The Customer's Perspective

Top Lessons Learned

What I would like to learn at RecSys

Questions

What I would like to learn at RecSys

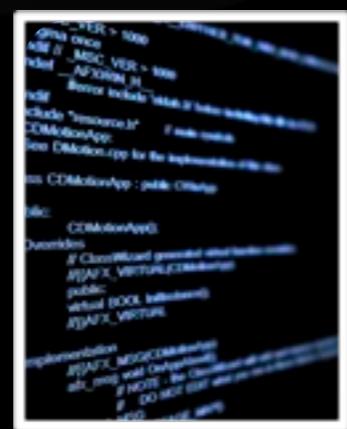
What relevance has each part in a Recommender?

Recommender

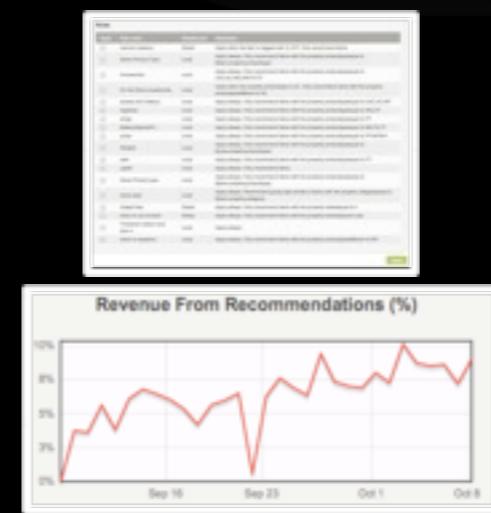
Knowledge Base



Knowledge Processing Application



Business Control & Analytics



User Interface



What I would like to learn at RecSys

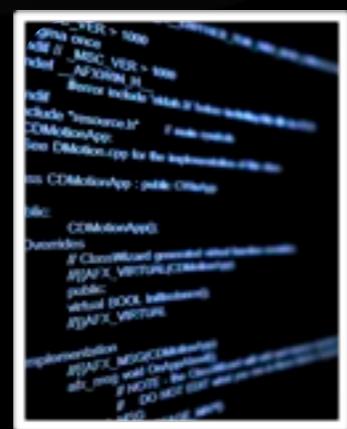
What relevance has each part in a Recommender?

Recommender

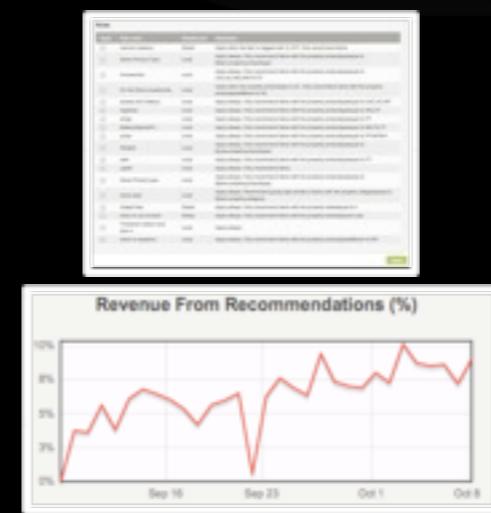
Knowledge
Base



Knowledge
Processing
Application



Business
Control
& Analytics



User
Interface

50%



What I would like to learn at RecSys

What relevance has each part in a Recommender?

Recommender

Knowledge
Base

25%



Knowledge
Processing
Application



Business
Control
& Analytics



User
Interface

50%



What I would like to learn at RecSys

What relevance has each part in a Recommender?

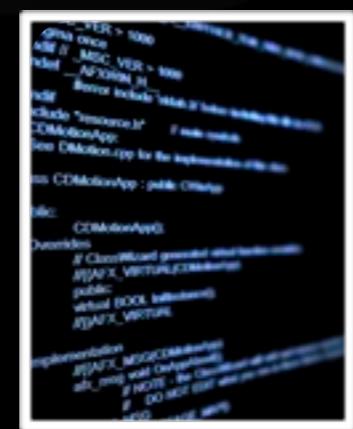
Recommender

Knowledge
Base

25%

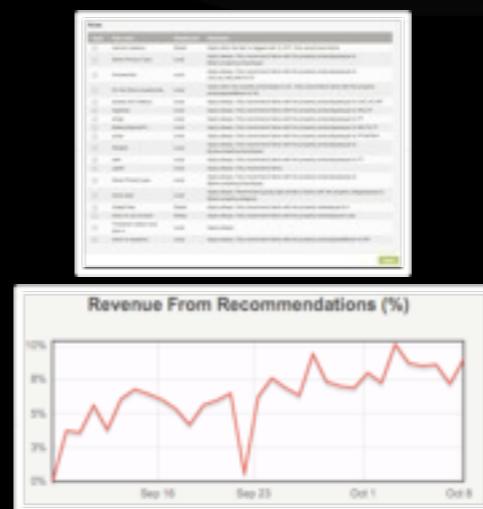


Knowledge
Processing
Application



Business
Control
& Analytics

20%



User
Interface

50%



What I would like to learn at RecSys

What relevance has each part in a Recommender?

Recommender

Knowledge
Base

25%



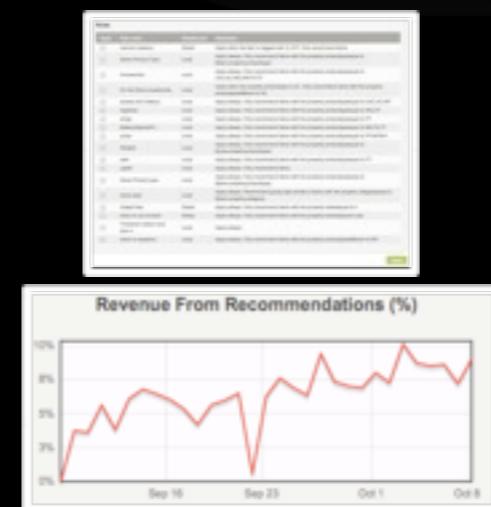
Knowledge
Processing
Application

5%



Business
Control
& Analytics

20%



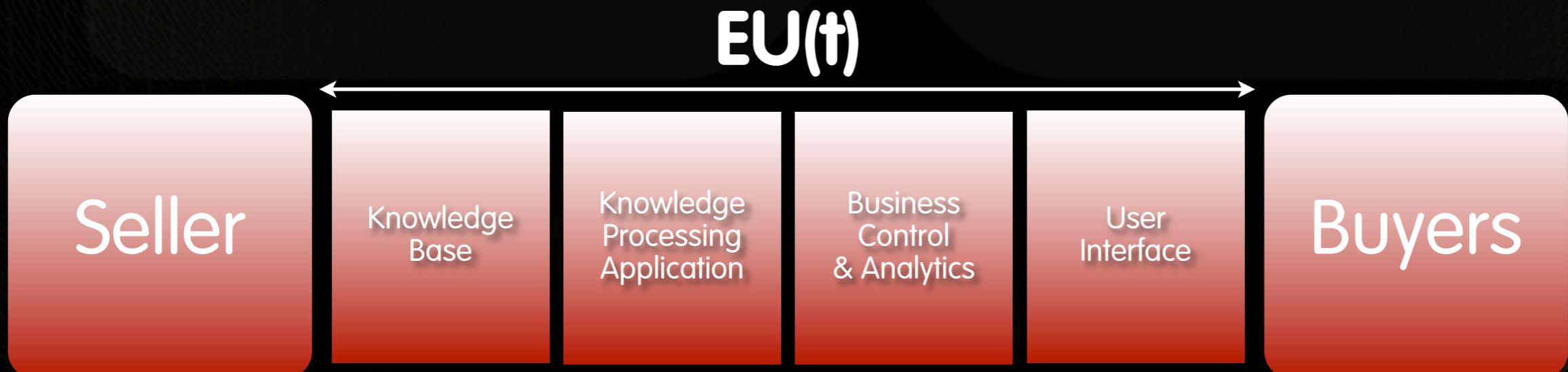
User
Interface

50%



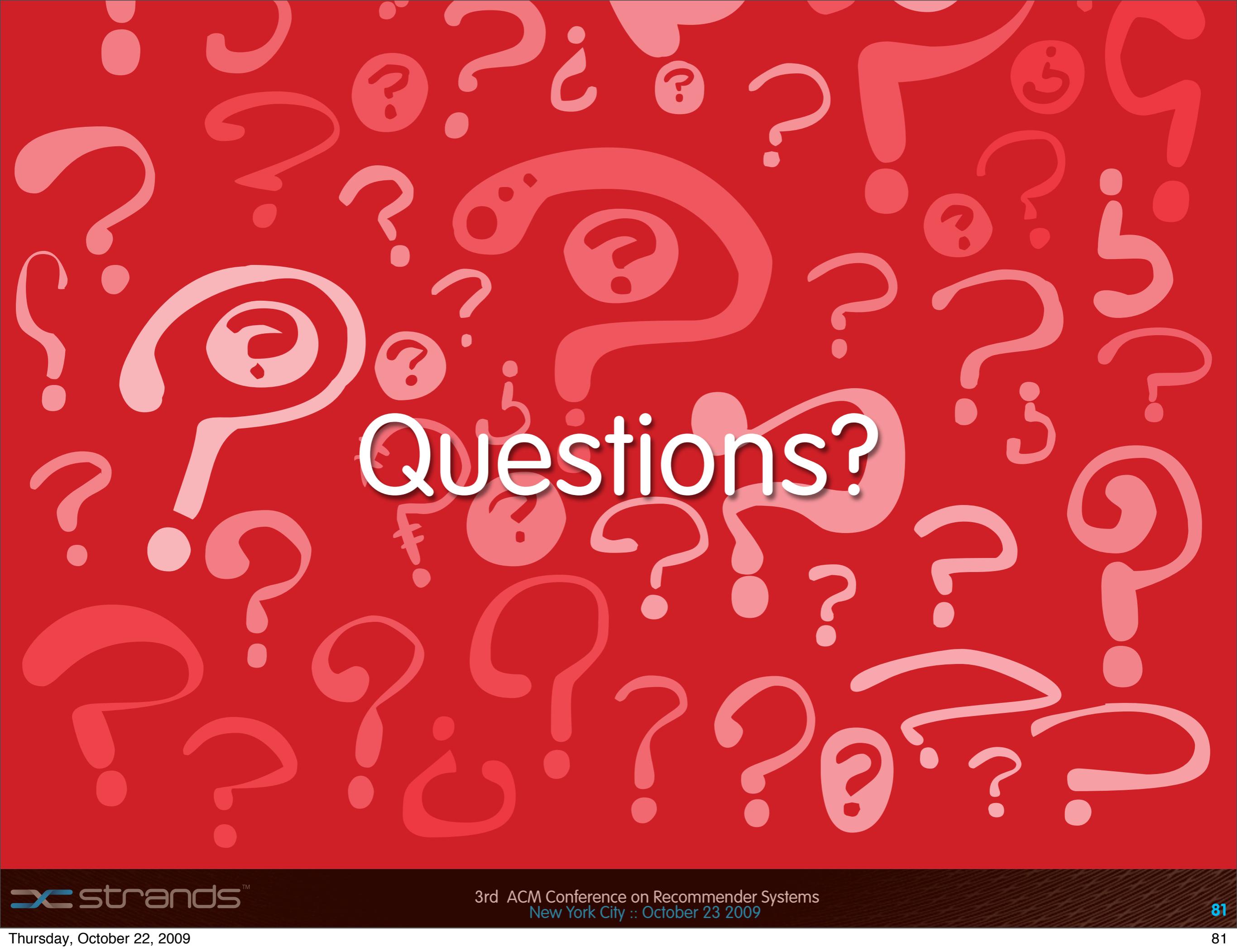
What I would like to learn at RecSys

- Knowledge engineering for Recommender Systems
- A framework to analyze the **expected utility** of each recommendation and guide the recommender over time to get the most out of every customer



RecSys 2010





Questions?

Contact

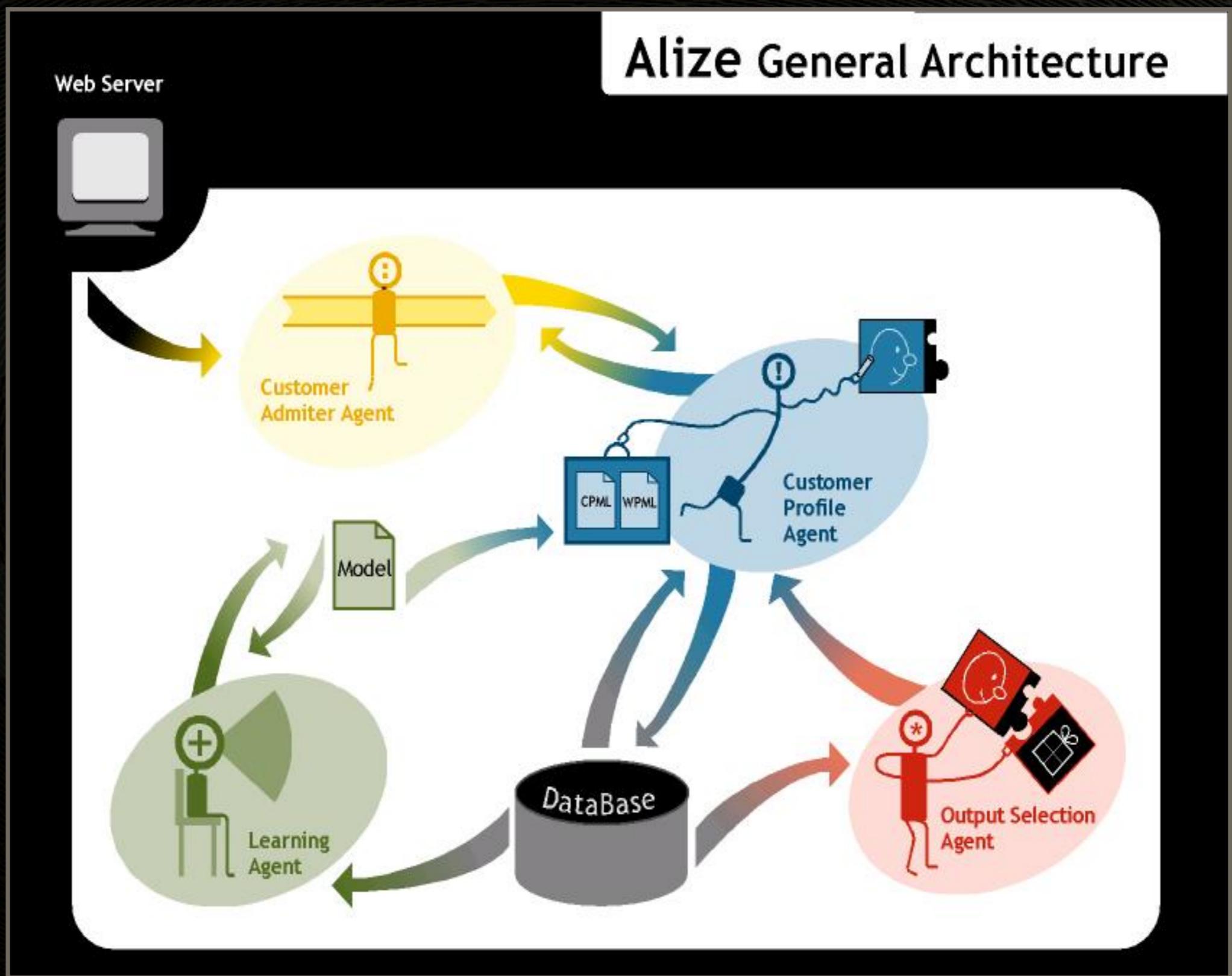


Francisco J Martin
martin@strands.com

Strands, Inc

**760 SW Madison Suite 106
Corvallis, OR 97333
USA
Tel +1 541 753 4426**

Alize General Architecture



Example Sites using Strands Recommender

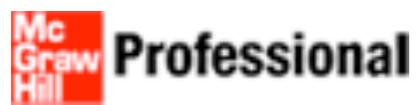
TRAVELSMITH



DISCOUNT DANCE SUPPLY



COSTUMES INC.



Strands Recommender Widget Examples

YOU MAY ALSO LIKE

*NEW Vapor
Price: \$129.99

*NEW SW Rusty Malinoski Signature Competition Vest
Price: \$124.99

Lumbar Extender
\$79.99

Real-Ease Neck Relaxer
\$49.95

You might also like...

Stamina Inversion Station
\$199.99

The NeckPro Traction Device
\$50.95

Related Products:

Merrell Men's Radius Waterproof - Clay/Ginger Nubuck
\$110.00

Merrell Men's Radius Mid Waterproof - Cocoa Nubuck
\$125.00

SIMILAR BESTSELLERS

Topo Ranch Couldridge Polo
\$58

Dream Sacks Mens Short Sleeve Shirt
\$42

Gabriela Artigas Ebony Turquoise Balls Necklace
\$224

Partybols Drunken Banana
\$32

Distilled Mason Jacket
\$361

Recommended shows

Recommended Tracks & Albums

Inbox	Snapshot [Original]	Black Hole Recordings	28.11.05	Buy € 1.30
Cosmic Gate ft. Aruna	Under Your Spell [Myon & Shane 54 Monster Mix]	Black Hole Recordings	12.10.09	Buy € 1.30
Cosmic Gate ft. Aruna	Under Your Spell [Duderstadt Remix]	Black Hole Recordings	12.10.09	Buy € 1.30

Strands Recommender Customer Profile

- Online retailer specializing in apparel, electronics, sporting goods, hardware/home improvement, health/beauty, etc.
- Generating yearly revenues between \$5 - \$60M
- Maintaining a catalog of over 1000 products
- Looking for a way to save/time money by automating merchandising, cross/up-selling and email targeting
- QA testing, adjustments



TRAVELSMITH



DISCOUNT DANCE SUPPLY



LUGGAGEPOINT.com
Over 200 brands to get you going!

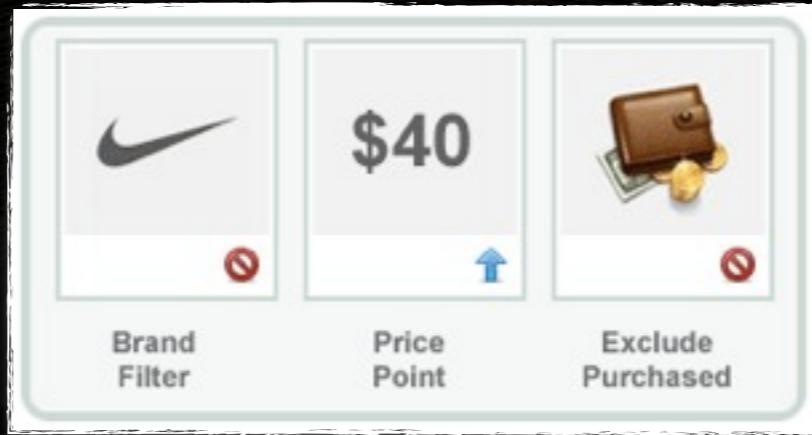
- Currently have over 50 customers ranging in size \$5M - \$300M
- Average deal size of \$2000 per month

Strands Recommender Product Overview



Recommendations

- Easy implementation via javascript or web-services API
- Seamless cross/up-sells and personalization throughout the whole customer lifecycle
- Recommendations are automatically adjusted based upon individual and site wide consumer behavior



Merchandising

- Pre-configured rules/filters derived from numerous implementations make a merchandisers job extremely easy
- Flexible merchandising interface allows for basic merchandising through very specific rules to fit marketing needs



Testing & Reporting

- Detailed reports provide insights into increases in AOV, conversions, revenue, page views and more
- Advanced A/B testing tools allow for testing on a site-wide and per recommendation widget basis

Typical Customer Recommendation Placements

1 **Personalized landing page**

2 **Product page up-sell**

3 **Check out page cross-sell**

4 **Personalized email / newsletter**

The four following areas have been found to increase sales and conversion by 3-12%

Typical Customer Implementation Timeline

