



DATA + WEB MARKETING

Insights from the field

Speaker: Amanda Shiga, Nonlinear Creations

Quick intro

- B.Sc. Comp Sci @ uOttawa | TIM M.A.Sc. @ Carleton
- Vice President, Marketing Science @ Nonlinear
- Twitter @amandashiga

Let's meet Philip, marketing director. He's stressed.

The CEO: “Increasing revenue from this customer segment is one of our top priorities. Are we being strategic with our data?”

The CMO: “Our budget is being cut again. You'll have to do more with less people, less money and on the technology platforms we've already invested in.”

The IT director: “We've made a cost-saving decision to switch marketing platforms...again.”

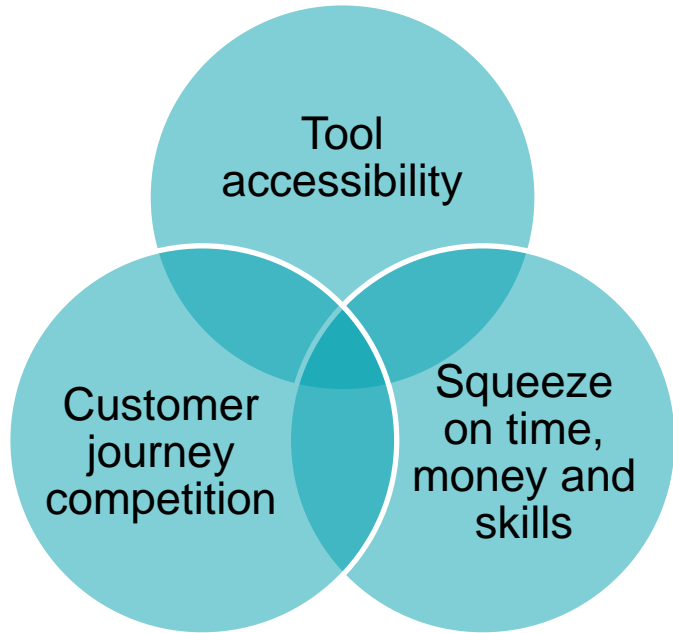
The Line of Business director: “Sorry, you can't have access to our customer data.”

Harvard Business Review: “The data scientist is the sexiest job of the 20th century.”

Business literature: “This Fortune 500 organization transformed themselves into a data-driven organization and beat the competition. You should too”.

Venture capitalists: “We're investing billions in data, analytics and machine learning!”

A problem and an opportunity in 2016

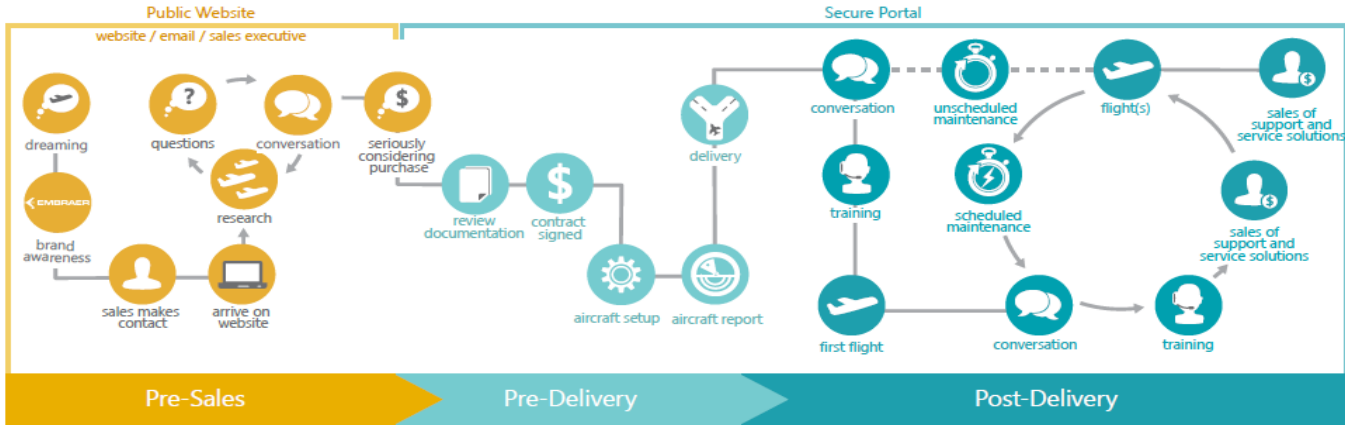


The
promise
of data

A simple, linear customer journey

	Awareness	Research	Consideration	Purchase	Support	Recommend
User needs/ questions	<p>Who are you?</p> <p>What do you do?</p> <p>I have a problem, can you fix it?</p> <p>What kinds of products/ services do you offer?</p>	<p>I want to know more about your products</p> <p>What are your product's features?</p> <p>How much does it cost?</p> <p>Why do I need this kind of product</p>	<p>Why should I choose you?</p> <p>What makes your product different from your competitors</p> <p>I want to compare features between you and a competitor</p> <p>I want to talk to someone</p>	<p>How do I buy?</p> <p>What support do you offer?</p>	<p>I need training</p> <p>I have a problem who can I call?</p> <p>Is there an outage? When will it be over?</p>	<p>Contact customer for testimonial</p> <p>Allow user to easily share website content to colleagues</p>
Website content & offline actions	<p>Basic company information on home page</p> <p>Solutions-focused content</p> <p>Overview of company offerings</p>	<p>Product pages</p> <p>Product pricing</p> <p>Feature lists</p> <p>Whitepapers</p> <p>Videos</p> <p>Product benefits</p> <p>CTA – get a quote</p>	<p>Differentiators</p> <p>ROI information</p> <p>Feature tables</p> <p>CTA - Contact us button</p>	<p>CTA – buy now</p> <p>Information on product support</p>	<p>Training information</p> <p>CTA – get help with your product</p> <p>Information on outages</p>	<p>Email user for testimonial</p> <p>Social sharing buttons</p>

Digital Engagement Portal — Map



Embraer Executive Jets Portal (unified website and portal)
 Implicit & Explicit Personalization with DMS (Geolocation, Behaviour, Profiling and more)
 Unified experience powered by
Sitecore Customer Engagement Platform + CMS

Seamless integration — Supporting applications + functionality*

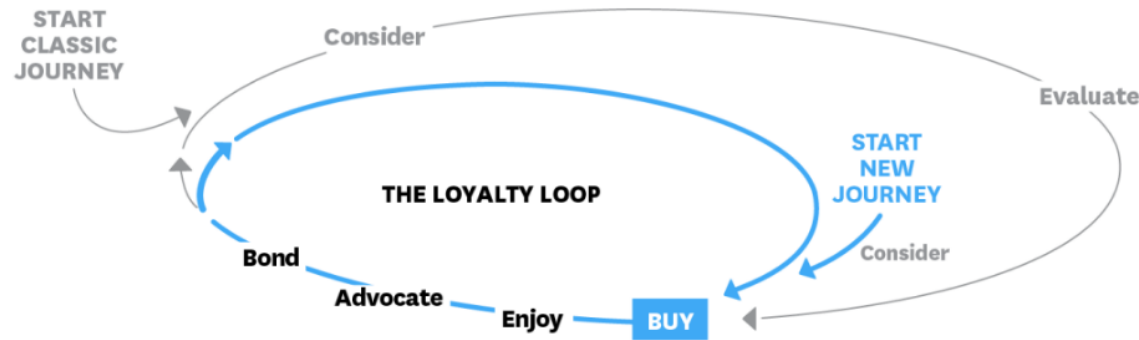
- Public site search
- Salesforce — lead and conversion management
- Pardot — email marketing and event management
- Enterprise search
- Integrations to business applications and service bus
- Telligent Community — blogs, forums, message center
- Dashboards and reporting
- Wordpress — Customer service and support app
- eParts - e-commerce

Data analytics with Sitecore Experience Database + Profile

*Not a comprehensive list

Related factor #1: Competing on the customer journey

Streamlining the Decision Journey



CLASSIC JOURNEY

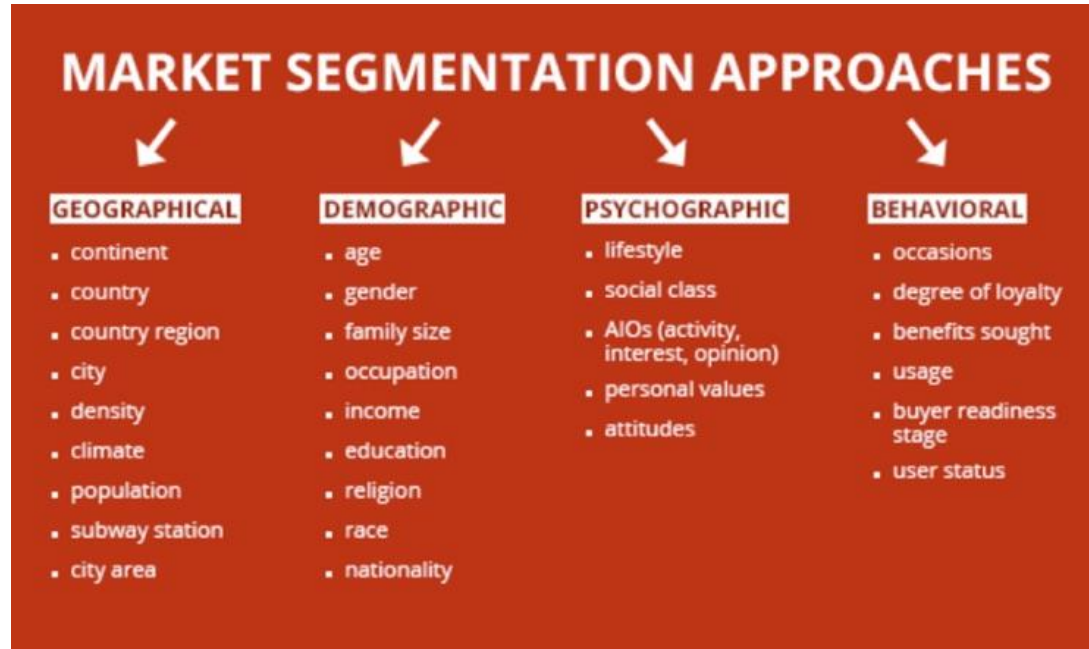
In the classic journey, consumers engage in an extended consideration and evaluation phase before either entering into the loyalty loop or proceeding into a new round of consideration and evaluation that may lead to the subsequent purchase of a different brand.

NEW JOURNEY

The new journey compresses the consider step and shortens or entirely eliminates the evaluate step, delivering customers directly into the loyalty loop and locking them within it.

<https://hbr.org/2015/11/competing-on-customer-journeys>

Related factor #2: Audience segmentation and more access than ever to behavioural insight



So, what's the reality?

	Awareness	Research	Consideration	Purchase	Support	Recommend
User needs/ questions	Who are you? What do you do? I have a problem, can you fix it? What kinds of products/ services do you offer?	I want to know more about your products What are your product's features? How much does it cost? Why do I need this kind of product	Why should I choose you? What makes your product different from your competitors I want to compare features between you and a competitor I want to talk to someone	How do I buy? What support do you offer?	I need training I have a problem who can I call? Is there an outage? When will it be over?	Contact customer for testimonial Allow user to easily share website content to colleagues
Website content & offline actions	Basic company information on home page Solutions-focused content Overview of company offerings	Product pages Product pricing Feature lists Whitepapers Videos Product benefits CTA – get a quote	Differentiators ROI information Feature tables CTA - Contact us button	CTA – buy now Information on product support	Training information CTA – get help with your product Information on outages	Email user for testimonial Social sharing buttons



Reality check #2

~150



2011

~350



2012

~1,000



2014

~2,000



2015



~3,500
(3,874 logos)

2016



Reality check #3



Gartner Web Content Management Quadrant 2016

SO WHAT CAN PHILIP DO?



Advice to Philip

- Demonstrating insight and lift for a valuable audience segment is a win for any marketer
- The data he can collect around his customer journey with existing web tools is a valuable place to start
- If he's facing political and technical barriers, start where he has access

A call for creativity

Top 10 skills

in 2020

1. Complex Problem Solving
2. Critical Thinking
3. Creativity
4. People Management
5. Coordinating with Others
6. Emotional Intelligence
7. Judgment and Decision Making
8. Service Orientation
9. Negotiation
10. Cognitive Flexibility

in 2015

1. Complex Problem Solving
2. Coordinating with Others
3. People Management
4. Critical Thinking
5. Negotiation
6. Quality Control
7. Service Orientation
8. Judgment and Decision Making
9. Active Listening
10. Creativity



Source: Future of Jobs Report, World Economic Forum

Be creative in finding segmentation proxies

- Track as much of the customer journey as possible until you hit those technical or political barriers
- Use “data enrichment” tagging features in your platforms to the fullest extent possible
 - *What are meaningful proxies of customer segmentation and engagement?*

MARKET SEGMENTATION APPROACHES



GEOGRAPHICAL

- continent
- country
- country region
- city
- density
- climate
- population
- subway station
- city area



DEMOGRAPHIC

- age
- gender
- family size
- occupation
- income
- education
- religion
- race
- nationality



PSYCHOGRAPHIC

- lifestyle
- social class
- AIOs (activity, interest, opinion)
- personal values
- attitudes



BEHAVIORAL

- occasions
- degree of loyalty
- benefits sought
- usage
- buyer readiness stage
- user status

Be creative with a “poor man’s data warehouse”

- How can we unify pieces of data across technical and political silos?
 - A federated search index (Coveo)
 - A Tag Management System with a mature set of connectors (Tealium)
 - Journey analytics laid on top of web and mobile apps (Google, Thunderhead, Sitecore FXM)

Be creative in tangible applications of data analysis techniques

- Map your business question to data analysis techniques
- Especially questions that aren't being easily answered by your existing systems...
- Or can't be answered in a reasonable amount of time

An interesting place to start

Marketing problem space	Data analysis technique
Predictive lead scoring and validation of contributing proxies	Classification (supervised ML)
Anonymous audience segmentation – validation and exploratory	Clustering algorithms
Optimization of internal lead nurturing task sequencing	Markov chain analysis

[Data Mining for the Masses](#) by Matthew North

Be creative in tool use

- Watson Analytics
- Microsoft Azure Machine Learning
- RapidMiner Predictive Analytics
- And web analytics platforms are racing to keep up

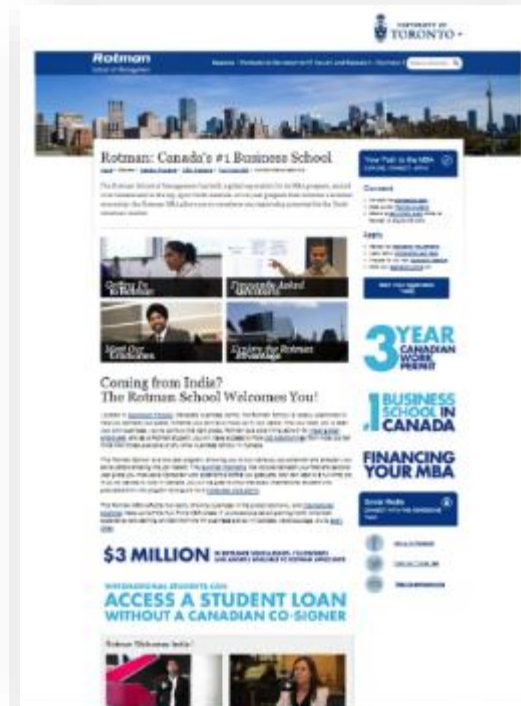
IDEA IN PRACTICE: THE ROTMAN STORY



Rotman School of Management

UNDERGRADUATE
EXECUTIVE MBA DEGREE MORNING OR
ROTMAN MANAGEMENT PHD EVENING MBA
MAGAZINE FULL-TIME MBA MASTER OF FINANCE
GRADUATE DIPLOMA EXECUTIVE PROGRAMS
IN PROFESSIONAL SPEAKER SERIES GLOBAL
ACCOUNTING INITIATIVE FOR FACULTY EXECUTIVE
RESEARCH & WOMEN IN BUSINESS MBA
EDUCATION CENTRES MASTER OF FINANCIAL
RISK MANAGEMENT

Rules-Based Personalization Example



Visitors from Middle East



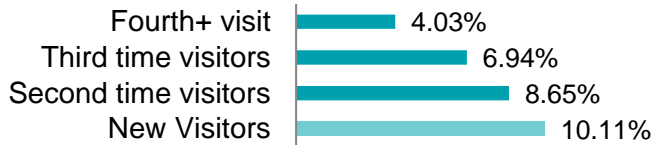
Coming from the Middle East? **CONSIDER ROTMAN**

Ranked #1 in Canada and in the top 25 in North America, the MBA program at the Rotman School of Management allows you to transform your leadership potential for the North American market

[LEARN MORE](#)

Rotman – Behaviour Varies by Visit

Home page visitors going to fees and...



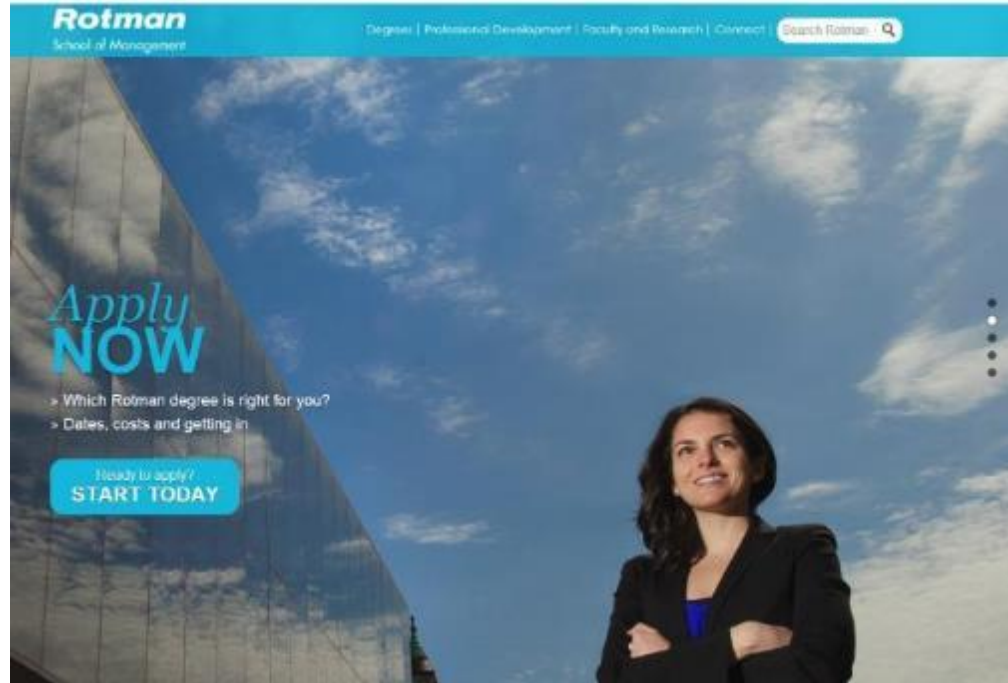
Admissions criteria from MBA Fulltime...



Application deadlines from MBA Fulltime page



Personalization by Visit Number ($V = 1$)



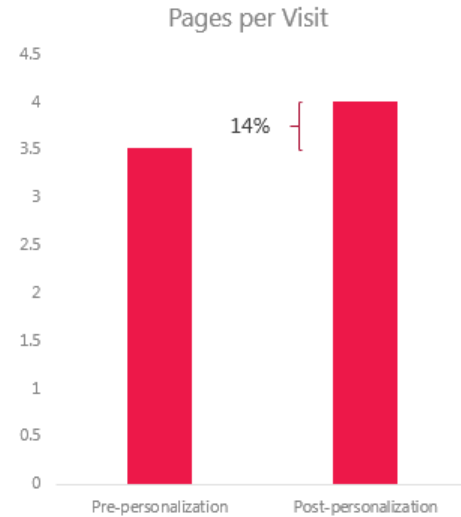
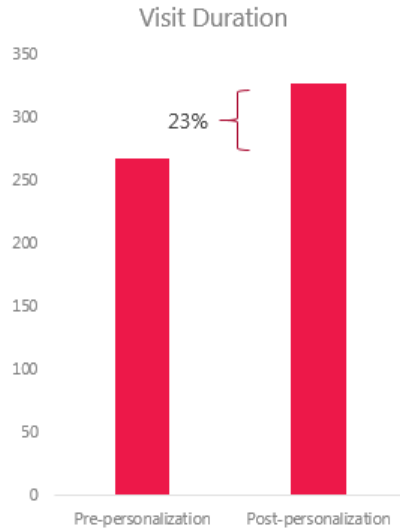
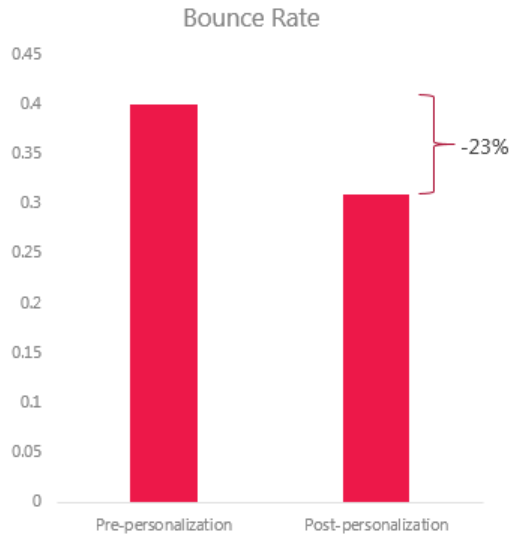
Can I get in and how much does it cost?

Personalization by Visit Number (V=2)

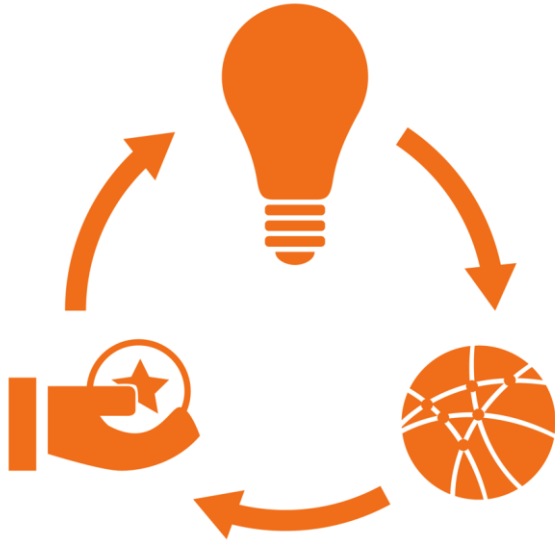
Why
should I
choose
Rotman?



Rotman Geographic Personalization Results



Organizational Need



Dean's Vision

- Research Excellence
- Globally Engaged Alumni
- Excellent Student Experience

Business Context – 2016

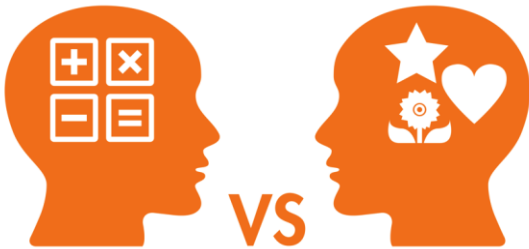


We had this notion that our audience was
compelled by ideas

Can we test it?

Business context

We wanted to answer these questions:



We tend to look at our audience in binary terms
Finance vs Creative types, the Poets and Quants
— **how is this characterization playing out?**

Business context

We wanted to answer these questions:



We assume that thought leadership plays an important role in our students deciding to attend Rotman — **is this true?**

Entering the data lab



Shaping our experiment roadmap

The perfect ingredients for taking a small step

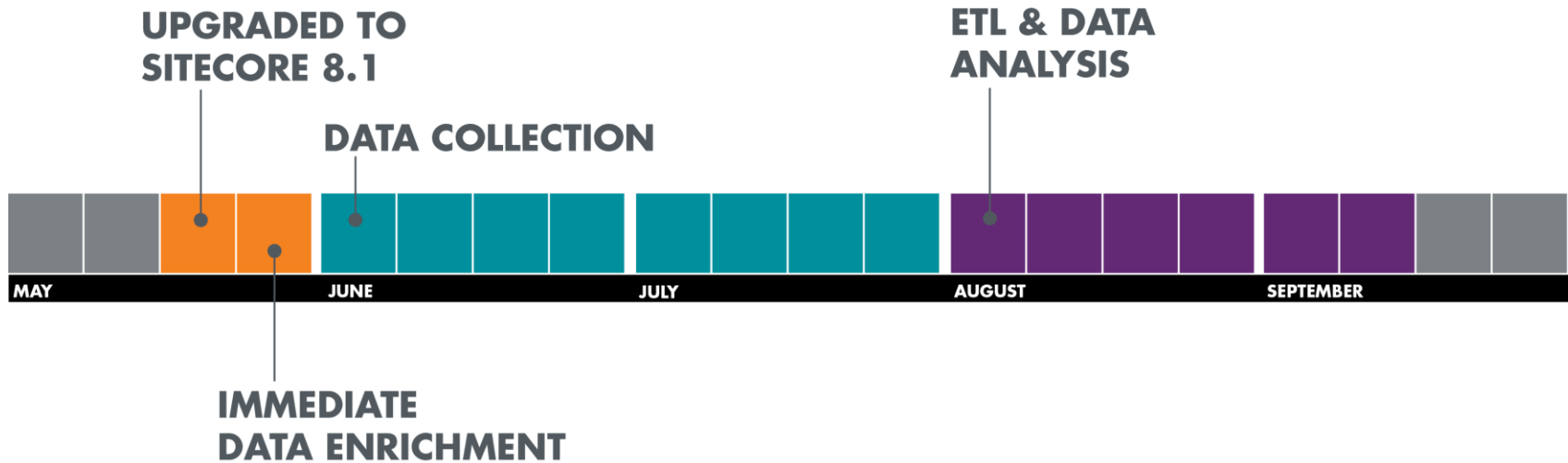
- An organizational culture open to experimentation and plenty of curiosity
- A base level of organizational analytics maturity
- Interesting hypotheses about audience behaviour and drivers
- Limited time, data, resources and processing power
- Fantastic data in Sitecore Analytics & xDB!



Opportunities for marketing teams

- **Lead scoring** - understanding the factors that predict conversion
 - Can this help us test our theories on poets/quants and thought leadership as a driving force of engagement?
- **Audience segmentation** - clustering into groups showing similar behaviour
 - Can this help us understand better how poets and quants behave, or whether there are other behavioural clusters we may not be aware of?

Our process



Our team



L to R

YuanYuan H.
PhD, Applied Math
Data scientist

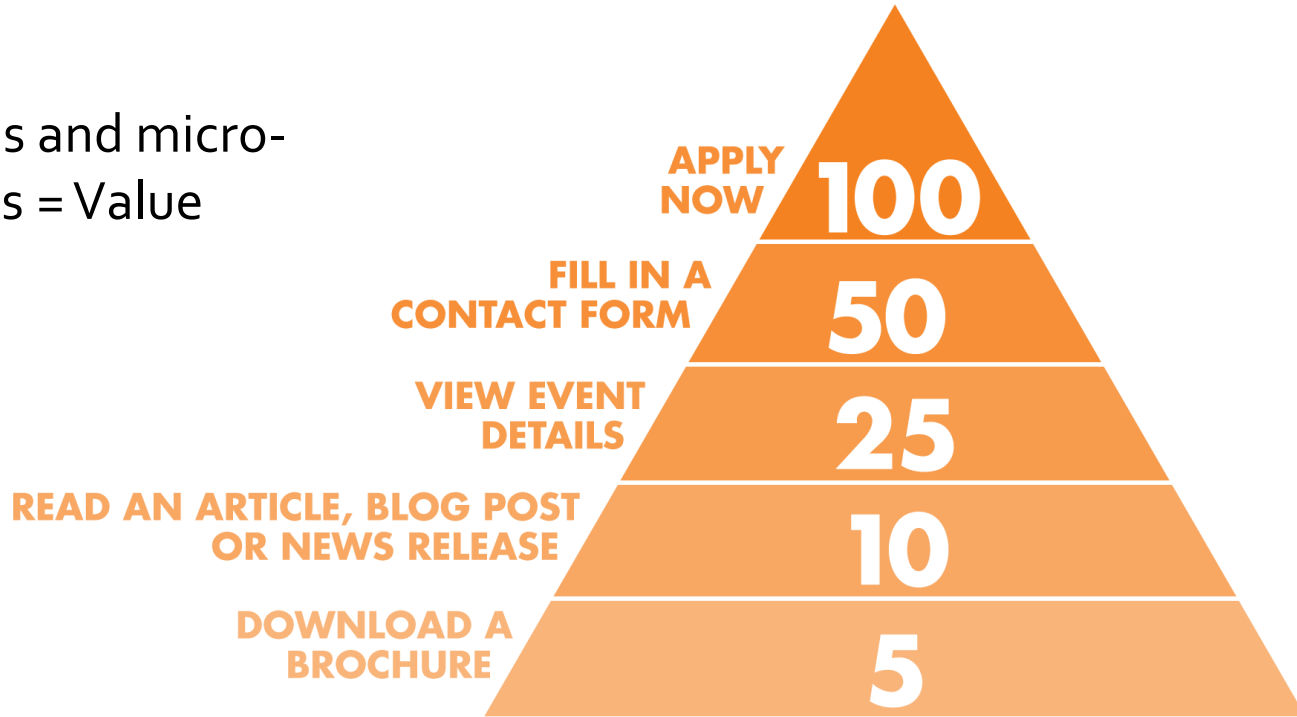
Amanda S.
Comp Sci / MarTech
Sitecore MVP

Courtney B.
MarComms / Web / Design
Sitecore Power User

Our Data & Engagement Model



Interactions and micro-conversions = Value



Content Profiling



**FINANCE,
ANALYSIS
& DATA
ORIENTATION**



**CREATIVITY
& INNOVATION**



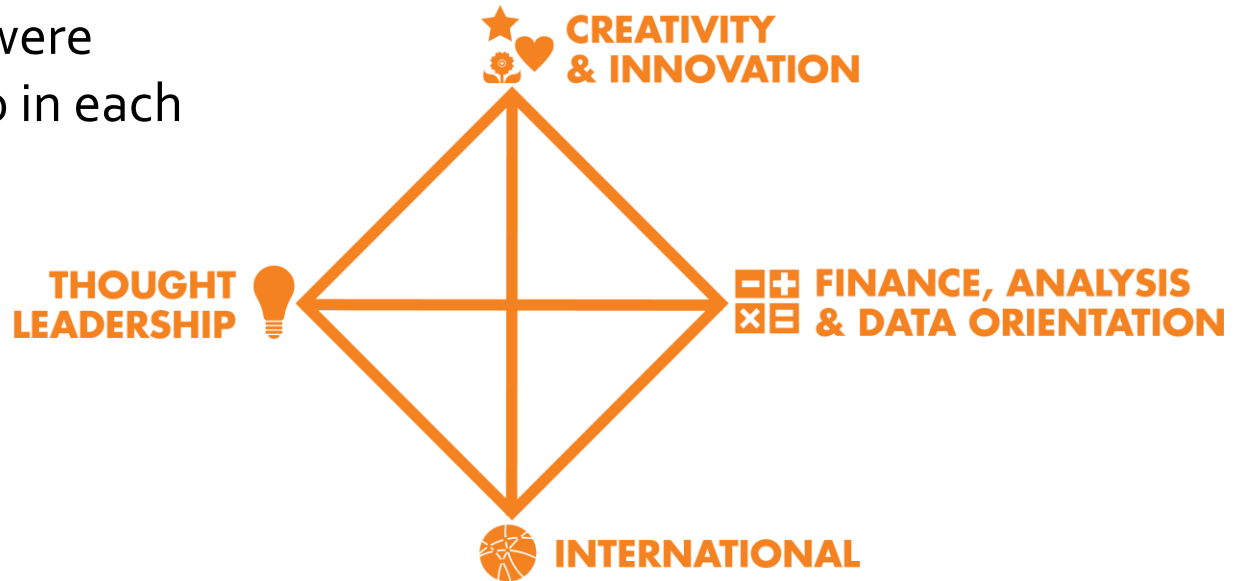
INTERNATIONAL



**THOUGHT
LEADERSHIP**

Content Profiling

The pages we tagged were given a value from 1-10 in each of the segments.



Content Profiling Example

What price shocks say about a stock's future

Home > Degrees > Masters Programs > MBA Programs > The MBA Majors > Risk Management and Financial Engineering > What price shocks say about a stock's future

Volatility and risk

What should investors make of sudden jumps or drops in stock prices that occur for no apparent reason? Rapid and unexplained changes in a stock's price bode ill for the long run.

The phenomenon of a stock suddenly gaining or losing value is hardly unusual. A new study from two Rotman faculty shows that half these price shocks are unaccompanied by earnings surprises or any other news that would account for them.

The research also shows that the effect of these price shocks is likely to be long-lasting. For stocks that experience big unexplained drops, cumulative returns over the following year are about six per cent less than those realized by shares of a control group of firms. And, paradoxically, the results for stocks that enjoy big unexplained jumps are considerably worse -- returns about 13 per cent below that of controls.

"Price shocks can be a warning sign that investors disagree about a company's

EXPLORE
OTHER CAREER
DIRECTIONS

Your Path to the MBA
EXPLORE, CONNECT, APPLY

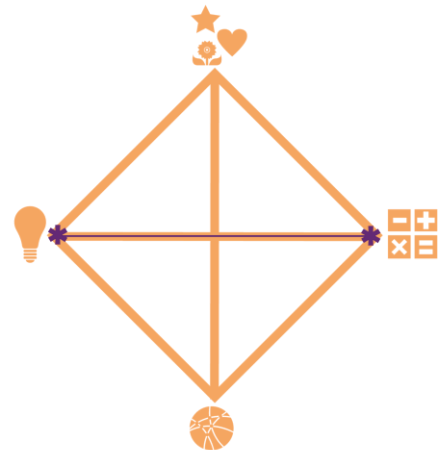


Connect

- » Have a question?
Contact our **admissions team**
- » View our **MBA brochure online**
- » Meet current **Rotman students** or **attend a class visit**
- » Attend a **recruitment event** online or in person

Apply

- » Prepare for our next **application deadline**
- » Start your **application** today or return to your **online profile**



Content Profiling Example

The need for creativity in business

Home > Degrees > Masters Programs > MBA Programs > The MBA Majors > Major in Business Design > **The need for creativity in business**

Developing your creative intelligence

As the world of business continues to evolve and accelerate, managers need more than just analytic skills to tackle the most complex challenges. Business Design is a creative problem-solving methodology that draws on the designer's way of thinking and applies it to create business value – from innovative new products and services to creative strategies and models.

The innovation expert, author and educator, describes creative intelligence and the urgent need for creative competencies.

At its core, creativity is all about figuring out what is meaningful to people. Many of the most successful innovations begin by recognizing the important dots and connecting them in new ways. For example, by connecting the dots of 'cheap', 'shoes' and 'social media', you get **Zappos**. Connect 'looking for friends', 'sharing' and 'social media' and you get **Facebook**. Connect the dots of 'cars', 'sharing values', 'cheap' and 'social media' and you get **ZipCar**. As a first step to discovering the next winnable innovation, you need to start by developing your creative intelligence.

Five competencies of creative intelligence

- » **Knowledge mining:** Those who are routinely creative are skilled at connecting information from various sources in new and surprising ways. Creative entrepreneurs, thinkers and artists use their own experiences and aspirations as a starting point for dreaming up new things. When their own experience is insufficient, they

EXPLORE
DESIGNWORKS

Your Path to the MBA

EXPLORE, CONNECT, APPLY

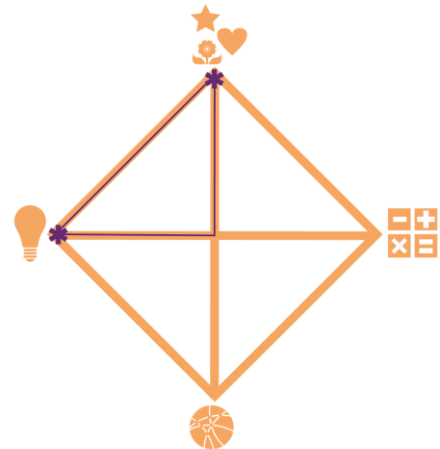


Connect

- » Have a question?
Contact our **admissions team**
- » View our **MBA brochure online**
- » Meet current **Rotman students** or **attend a class visit**
- » Attend a **recruitment event** online or in person

Apply

- » Prepare for our next **application deadline**
- » Start your **application** today or return to your **online profile**

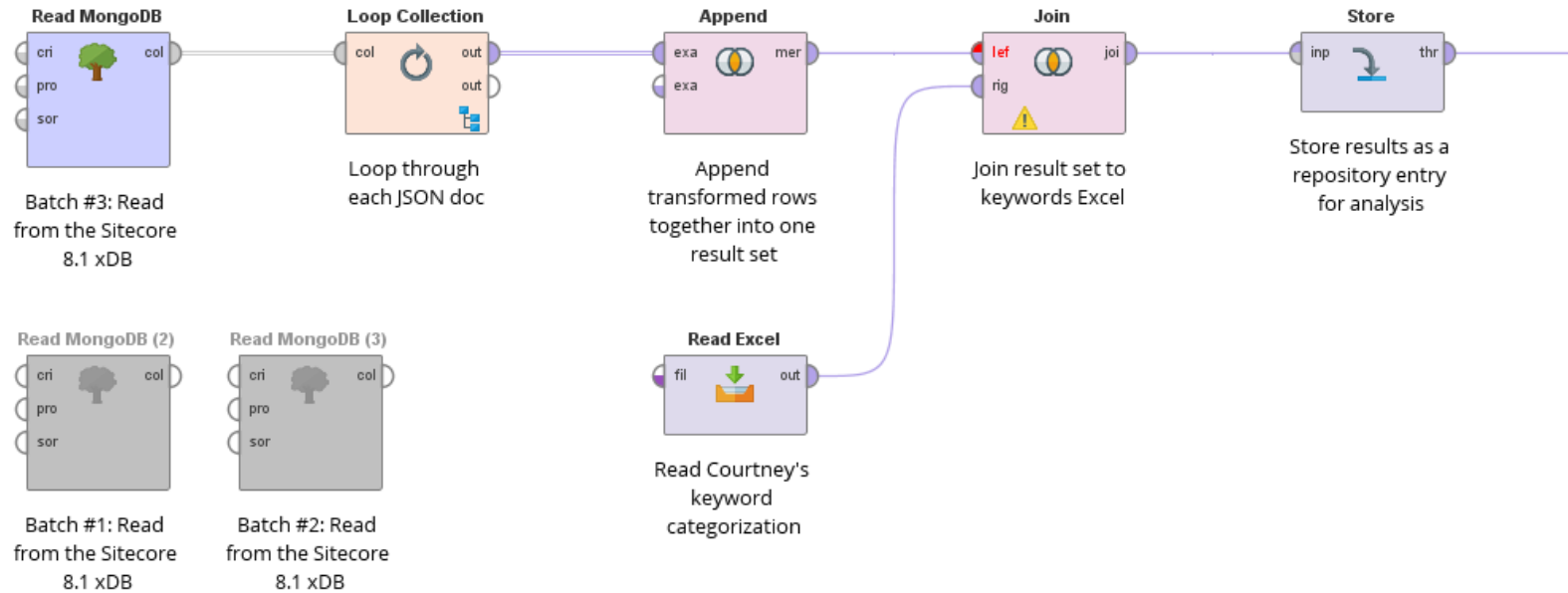


Our tools and infrastructure - keeping costs low



Key	Visits	Value...	Average dur...	Bounce rate	Conversion rate	Page views per visit
InternationalStudent	3	0	32s	33.33%	0.00%	1.67
Test	35	6	4min 37s	42.86%	60.00%	3.74
Creativity	511	0.94	2min 27s	50.29%	5.00%	3.14
Finance-ThoughtLeadership	5336	0.58	4min 15s	31.37%	3.00%	6.23
Finance	6770	0.61	2min 4s	48.08%	4.00%	2.54
ThoughtLeader	49295	1.14	2min 56s	38.68%	5.00%	3.83
Eric Pattern Card 1	48932	1.45	3min 53s	33.84%	7.00%	4.5
Creativity-ThoughtLeadership	17503	5.47	3min 50s	33.10%	23.00%	5.42
FT-MBA	52762	2.33	4min 46s	29.70%	10.00%	4.77

Making the data as consumable as possible



- The “fun art” of feature engineering: *thoughtful creation of new attributes* based on domain knowledge and end business goal
- Extract as many helpful columns as possible from your raw data
- Keep in mind what’s accessible in personalization engine – you’ll want to make use of your strong predictors!



Final ExampleSet

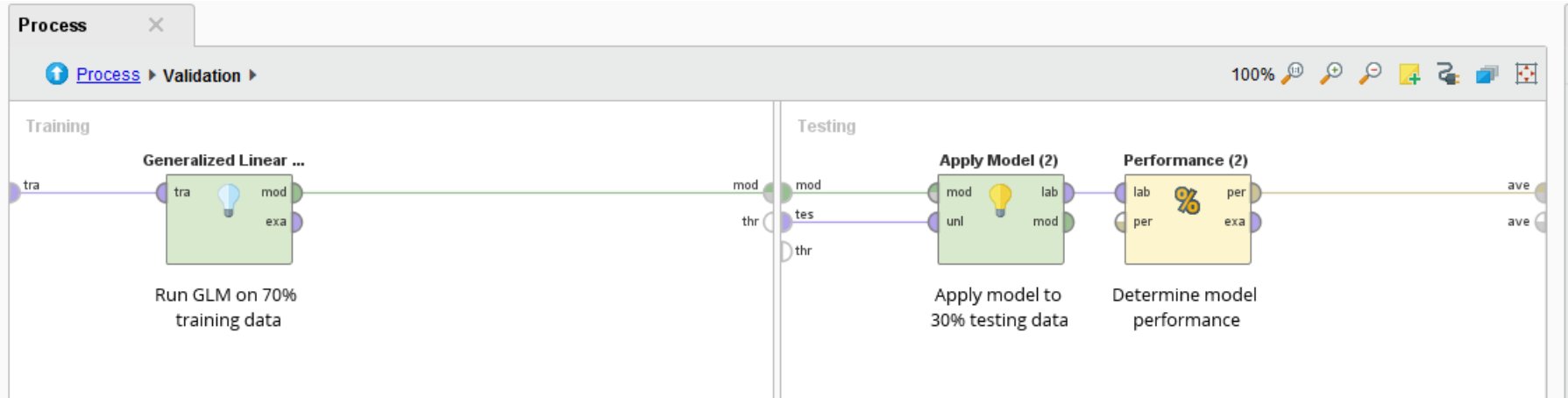
- 2 months of data = ~200,000 interaction records
- Approx. 60-90 minutes to run processing batches
- Ended up with 47 attributes (columns)

Running a supervised ML classification

We ran *binominal classification* to predict two attributes:

- 1) **hasConversion** – indicating whether they converted on any of the 12 goals on the website
- 2) **highValue** – indicating whether the session achieved an engagement value higher than 75 points

Supervised machine learning



The model learns...

And then we test how good it is!

ExampleSet (191518 examples, 4 special attributes, 27 regular attributes)

Filter (191,518 / 191,518 examples):

Row No.	hasConversion	prediction(hasConversion)	confid...	confid...	HourOfDay	startMonth	startDay	Browser.Br...	ContactVisit...	Profiles.Rot...	Profiles.Rot...	Profiles.Rot...	P
1	false	false	0.213	0.787	1	6	28	Chrome	1	80	20	20	1
2	false	true	0.122	0.878	18	6	30	Chrome	1	58	31	22	5
3	false	false	0.140	0.860	20	7	7	Chrome	2	249	92	92	6
4	false	false	0.968	0.032	20	7	7	Chrome	95	142000	56800	56800	2
5	false	false	0.217	0.783	22	6	13	Safari	1	73	34	34	5
6	false	false	0.248	0.752	5	6	19	Chrome	2	142	56	56	3
7	false	true	0.014	0.986	18	5	29	Mozilla	15	0	0	0	0
8	false	false	0.386	0.614	0	7	9	Safari	1	100	50	0	0
9	false	true	0.106	0.894	1	7	5	Chrome	1	319	127	127	6
10	false	false	0.147	0.853	22	6	21	Chrome	1	91	0	50	4
11	false	true	0.115	0.885	9	6	22	Safari	1	82	31	31	2
12	false	false	0.481	0.519	1	7	9	Chrome	9	220	20	0	0
13	false	false	0.188	0.812	14	6	23	Chrome	1	103	44	24	1
14	false	false	0.208	0.792	22	6	13	Safari	1	40	0	0	0
15	false	true	0.129	0.871	16	6	22	Safari	2	100	40	0	0
16	false	true	0.121	0.879	16	6	20	IE	1	60	0	40	2
17	false	false	0.199	0.801	22	6	18	Chrome	1	30	0	0	0
18	false	false	0.329	0.671	20	5	6	Chrome	1	0	0	0	0
19	false	false	0.499	0.501	19	7	7	Safari	1	0	0	0	0
20	false	true	0.101	0.899	18	6	20	Chrome	1	182	78	69	2

Results and interpretation

1) **Conversion** is predicted by:

- 1) Visit to Research area of the website
- 2) Matched to Thought Leader pattern
- 3) Matched to Full-Time MBA Prospect pattern
- 4) Visit to “Ideas You Can Use” area of the website

** Model performance accuracy 88%*

Results and interpretation

1) **High engagement** is predicted by:

- 1) Matched to Full-Time MBA Prospect pattern
- 2) Matched to Thought Leader pattern
- 3) Visit to Academic/Faculty area of website
- 4) Visit to Research Areas of website

** Model performance accuracy 85%*

The power of the results

Let's inform marketing strategy for Homepage refresh initiative

- 1) Push the highly engaged Creatives towards a higher value conversion like Apply Now
- 2) Lift the engagement of Quants by presenting very targeted financial thought leadership
- 3) Bring forward academic research, “ideas you can use” and professor bios more prominently on high traffic areas

What's next? (short-term)

- 1) More feature engineering to drive wider set of predictors
 - 1) Pull out more behaviour data from pages visited
 - 2) Add GeoIP data

- 2) Audience clustering
 - 1) Deeper insight into finance vs. creativity theory
 - 2) Refine understanding of thought leadership consumption

Long term possibilities

- Analyzing behaviour patterns over a years' time
 - Seasonal variations in the higher ed space
- Adding in Customer Data
 - Looking at data governance and privacy
 - Considering Student Data to append: events, enrollment, courses, profs, etc.
- Folding back into Marketing Operations
 - For lead scoring and clustering, retraining models regularly and feeding back into the database at the Contact level

CLOSING THOUGHTS



For organizations and industry

- Don't wait for your organization to restructure
- Always start with the business question and tie to revenue
- Start with the dataset that most easily accessible to you, even if it's not the most interesting or lacks data integrity.
 - (Anything that can give insight into customer motivation and segmentation is valuable. Try to look for the places where your existing analytics are not telling the whole story. Or flip that on its head, and look at the marketing platforms you've invested in and what they're gathering)
- Evangelize your pilot outwards

For research & students

	Awareness	Research	Consideration	Purchase	Support	Recommend
User needs/ questions	<p>Who are you?</p> <p>What do you do?</p> <p>I have a problem, can you fix it?</p> <p>What kinds of products/ services do you offer?</p>	<p>I want to know more about your products</p> <p>What are your product's features?</p> <p>How much does it cost?</p> <p>Why do I need this kind of product</p>	<p>Why should I choose you?</p> <p>What makes your product different from your competitors</p> <p>I want to compare features between you and a competitor</p> <p>I want to talk to someone</p>	<p>How do I buy?</p> <p>What support do you offer?</p>	<p>I need training</p> <p>I have a problem who can I call?</p> <p>Is there an outage? When will it be over?</p>	<p>Contact customer for testimonial</p> <p>Allow user to easily share website content to colleagues</p>
Website content & offline actions	<p>Basic company information on home page</p> <p>Solutions-focused content</p> <p>Overview of company offerings</p>	<p>Product pages</p> <p>Product pricing</p> <p>Feature lists</p> <p>Whitepapers</p> <p>Videos</p> <p>Product benefits</p> <p>CTA – get a quote</p>	<p>Differentiators</p> <p>ROI information</p> <p>Feature tables</p> <p>CTA - Contact us button</p>	<p>CTA – buy now</p> <p>Information on product support</p>	<p>Training information</p> <p>CTA – get help with your product</p> <p>Information on outages</p>	<p>Email user for testimonial</p> <p>Social sharing buttons</p>

“What makes a resource truly strategic, is not ubiquity but scarcity.”

- Nicholas Carr, HBR

Technology, for the most part, has become ubiquitous, but the talent and wisdom required to *use it strategically* — to successfully capture, analyze, and employ information to the greater end of profitability and growth — are all too scarce.

Quick mention

- Collaborative Masters Program in Data Science
- Open to a wide range of disciplines from across campus (biology to biomedical engineering, computer science to communications)
- Core course DATA5000 is project based, where teams are explicitly multi-disciplinary and are encouraged to work on real-world problems/datasets/tools

THANK YOU!

@AMANDASHIGA



nonlinear

LOCATIONS

TORONTO

49 Spadina
Avenue
Suite 201
Toronto, ON
M5V 2J1

+1 416 203 2997

NYC

445 Broad Hollow Rd.
Suite 25
Melville, NY
11747

+1 631 870 0317

SÃO PAULO

Avenida Susana, 93
Suite 204
São Paulo, SP,
Brazil
04130-000

+1 866 915 2997

CALGARY

888 3rd Street SW
Suite 1000
Calgary, AB
T2P 5C5

+1 403 351 0173

FLORIANÓPOLIS

Rua Iguaçú, 73
Florianópolis, SC
Brazil
88045-610

+55 48 4062 1301
+55 41 4063 9149

OTTAWA

987A Wellington St.
Suite 201
Ottawa, ON
K1Y 2Y1

+1 613 241 2067