



Nick Rockwell
Chief Technology Officer
The New York Times

Keynote:
News in the Age of
Algorithmic
Recommendation

News in the Age of Algorithmic Recommendation

Nick Rockwell, Chief Technology Officer
The New York Times

The New York Times



**Founded in 1851.
4,500 employees.
1600+ journalists.
127 Pulitzers.**

**250 stories published each day.
We reported from 160 countries.
A monthly audience of over 150 Million.
Nearly 5 Million print & digital subscribers.
More than 1 Billion downloads of The Daily.**

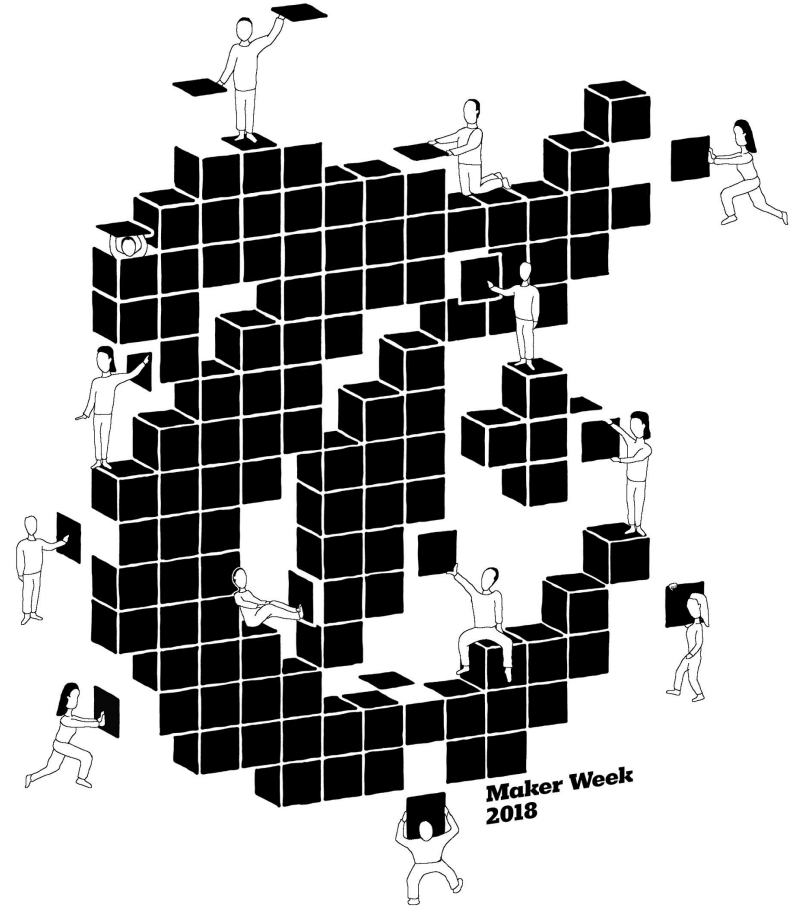
“ We seek the truth and help people understand the world.

This mission is rooted in the belief that great journalism has the power to make each reader's life richer and more fulfilling, and all of society stronger and more just. ”

Times Digital

Twenty years into our digital revolution, we have turned the corner as a digital business. It is working.

- 4 Million digital subscribers.
- New digital products, expansion into audio and television.
- We will reach our 2020 goal of \$800M in digital revenue a year early.



2011

The Digital Landscape

An open, desktop-based internet with nascent digital subscription models.

The Times's Business Model

An advertising-led business with predominantly print-driven economics.

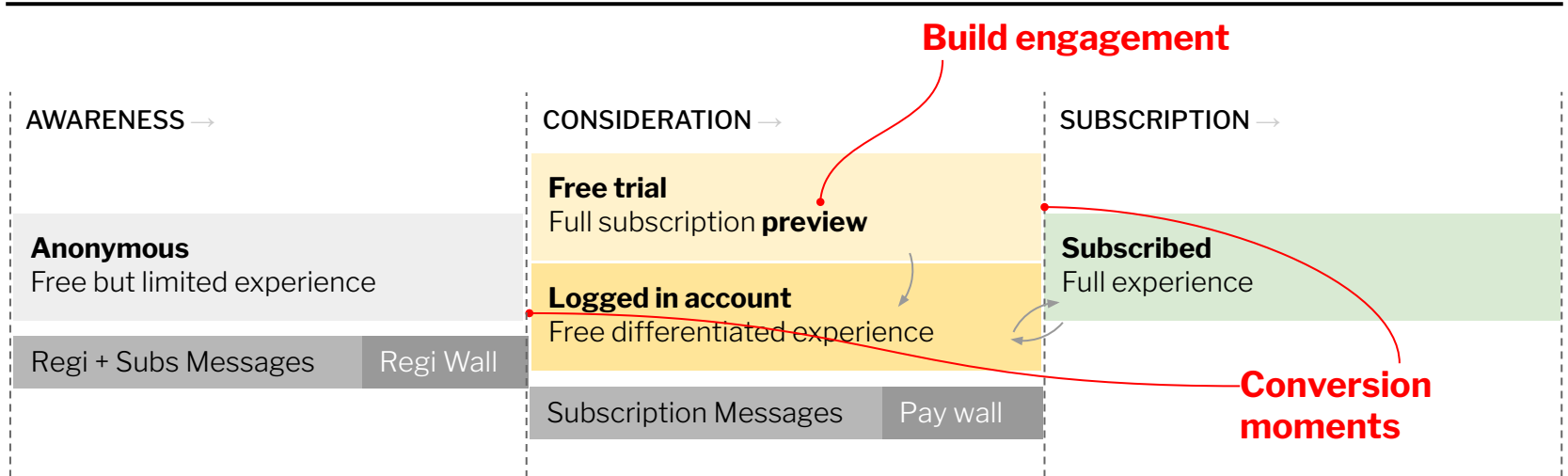
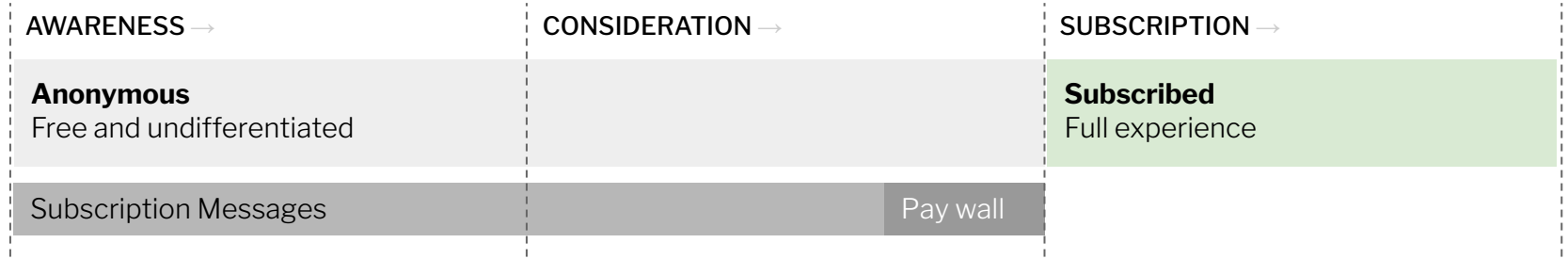
Today

→ A mobile-first world powered by platforms, apps, and proven digital subscription models.

→ A subscriber-first business driven by digital.

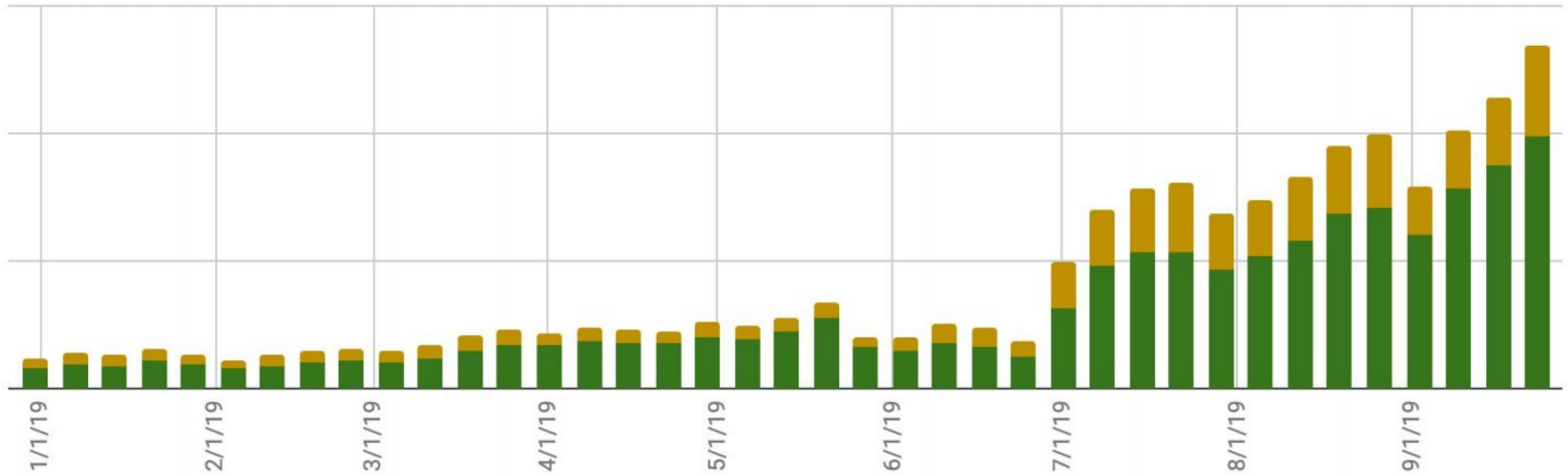
**What is the core
product challenge
today?**

Customer Journey Evolution



Registration Wall: Major Impact

International US



Engagement



Recommendation

Home Page



- Bar One is personalized under some conditions.
- Curation is the core value proposition.
- Layout is complex and difficult to automate.

ENGLISH ESPAÑOL 中文 Account [GET UPDATES](#)

Thursday, March 21, 2019 **The New York Times** Today's Paper

World U.S. Politics N.Y. Business Opinion Tech Science Health Sports Arts Books Style Food Travel Magazine T Magazine Real Estate Video

The Daily Listen to 'The Daily' A path to curing H.I.V.

The 'In Her Words' Newsletter We explore the psychology that keeps men in positions of power.

The Argument Listen to 'The Argument' What would a fair college admissions system look like?

S&P 500 +0.67% ↑ Dow +0.56% ↑ Nasdaq +0.89% ↑ 45°F 48°-42° New York, NY

BOEING CRASHES
Doomed Jets Lacked 2 Safety Features That Boeing Sold as Extras
• The planes that crashed in Ethiopia and Indonesia weren't equipped with optional safety features that could, in part, have helped the pilots detect erroneous readings.
• Now the company is making one of those features standard.
2h ago 1353 comments

Confusion, Then Prayer, in Cockpit of Doomed Lion Air Jet
Indonesian investigators described the sounds emanating from the cockpit as the flight crew fought to take control of a plane that kept bucking downward.
March 20 841 comments

Opinion >
Why Should Americans Be Grateful for \$138 Insulin? Germans Get It for \$55
Only by the bizarre logic of the American pharmaceutical industry does this drug count as any kind of generic.
54m ago

Robyn Powell
Even in Grief, I Still Have Pride
Being part of the disability community means constantly losing friends and allies. I don't expect that to change.
2h ago

J.J. Prescott and Sonja B. Starr
Your Criminal Record Shouldn't Last a Lifetime
Nicholas Kristof
New Zealand Shows the U.S. What Leadership Looks Like

MOSQUE ATTACKS
New Zealand Announces Ban on Weapons Used in Massacre That Killed 50
• Prime Minister Jacinda Ardern said all military-style semiautomatic weapons and all high-capacity ammunition magazines would be outlawed.
• The country's plan, which comes six days after attacks on two mosques, stands in contrast to the resistance to similar calls for restrictions in the U.S.
3h ago 931 comments

Ethiopian Airlines had the Boeing 737 Max 8 simulator. The captain of the doomed flight had not received training on it.
1h ago

Tim Wu
The Democrats Have a Complexity Problem

Bret Stephens
Palestinian Lives Don't Matter*

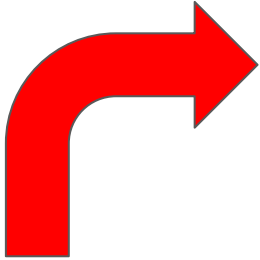
Farhad Manjoo
The White-Extinction Conspiracy Theory Is Bonkers

Jennifer Finney Boylan
I Wasn't Crazy. The World Really Was Getting Darker.

The Editorial Board
What Happens When Lawmakers Run Out of Abortion Restrictions to Pass
The Editorial Board
Condemned to Repeat the History of Bank Failures?


Standard 737 Max planes are not equipped with a so-called angle of attack indicator or an angle of attack disagree light. The indicator will continue to cost airlines extra, but the light won't. Ruth Fremson/The New York Times





Smarter Living >



The Right Way to Ask, 'Can I Pick Your Brain?'

Smarter Living March 18



Share a Bed Without Losing Sleep

Wirecutter March 18



How Not to Be a Snowplow Parent

Family 1h ago 71 comments



Common Electrical Safety Problems (and How to Solve Them)

Real Estate March 8 254 comments



6 Things to Bring to an All-Inclusive Resort

Travel March 5

Features



Daniel Dorsa for The New York Times

He's the Star of 'Tootsie' on Broadway.

Why He's Not Just Another Broadway Star



Overlooked No More: A Rights Advocate for Alaskan Natives

Elizabeth Peratrovich and her husband rallied Natives to ensure the passage of the first U.S. anti-discrimination law. She never received a Times obituary, until now.

Obituaries March 20



Wedding Crashers Just Want to Have Some Fun

Ah, the reception. Free food. Free drinks. What's not to love? Wait, says the couple: Who's that stranger eating our food and drinking our alcohol?

Weddings 6h ago



Best of Late Night: 'Beefing With a Dead Man'

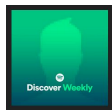


Review: Hearing the Roar of Racism

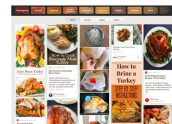
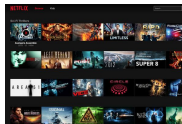
Contextually ranked "Smarter Living" module.



Key Driver for the Giants



NETFLIX



Strategy

Drive engagement and propensity to subscribe through **personalized recommendation**.

Improve engagement and retention via **personalization**. Preference data also drives content investment decisions.

Deepen engagement through visual discovery via **related content**, and **recommendations**.

Results

30% of plays from recommendations, 40 million Discover Weekly users.

80% of plays from recommendations. Netflix attributes \$1B in annual value to recommendations.

Pinterest attributes 40% of it's engagement to its related pins recommendation feature.

Investment

\$100M Echo Nest acquisition, 80+ data scientists on staff.

Team of 300+ dedicated to content discovery, a \$150M yearly investment

Team of 250 dedicated to discovery, and ~40 data scientists on staff

Why?

- Importance of hierarchy on the home page.
- Judgment and curation as a core value proposition.
- Lack of clarity around strategic impact/fit.
- Concern over creating a filter bubble.
- Perfectionism.

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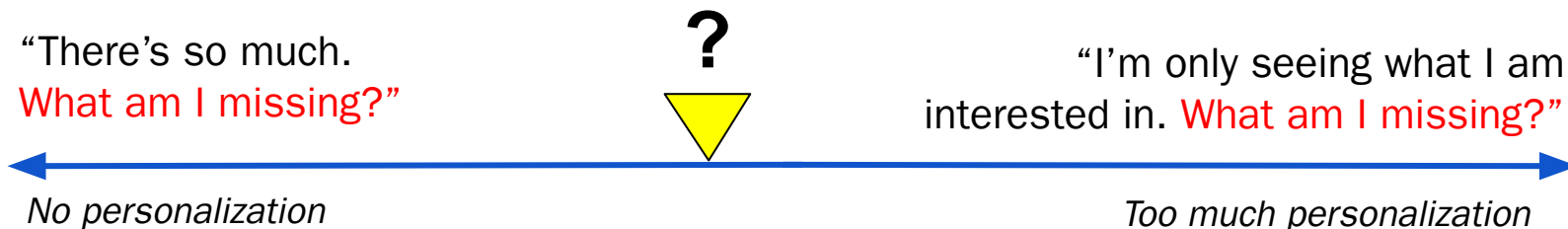
Does this support the mission?

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This mission is rooted in the belief that great journalism has the power to make each reader's life richer and more fulfilling, and all of society stronger and more just. ”

**What Do Our
Readers Think?**

Personalization Solves FOMO... Until it Doesn't



*“I like that you (NPR One) don’t know me too well, so I don’t feel boxed in by your recommendations or control over my listening...(Improvements?) Maybe slightly more tailored news stories (**whoops, just contradicted myself.**)” -- Maeve, EM, NYC*

“Personalized” Means Many Things

“Adapted”

Personal

...my stuff
...my history
...my connections

e.g., my bank account, my pictures on FB

Optimized

...my settings
...my location
...my frequency

What I want, how I want it

Predicted

...your content suggestions

Based on my, or my cohorts', past behavior

Mixed Feelings on News and Personalization

Many of the subscribers did not want a personalized news content experience from The Times (or any news source).

*“I value that about the NYT: it’s not customized to me. I don’t think an **unbiased news source** should be.”* – Maia, RA, Chicago

*“**Top stories** should stay away from being too personalized.”*
– Maeve, EM, NYC

What Personalized Experiences do Readers Want From The Times?

Subscribers and non-subscribers wanted an **idealized news home screen** to have breaking news and summaries first.

After that, they wanted **variety**, which could include favorite columnists or writers followed by lifestyle content based on their **interests, time of day, or location**.

“I want them to notice that I read certain sections a lot. When I get to the bottom of an article they could say ‘catch up on our food page.’”

– Alexander, EM, San Francisco

Recommendation Product Strategy

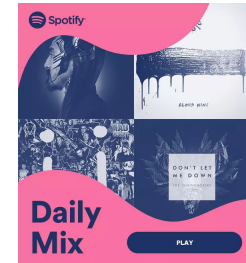
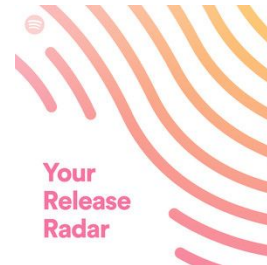
Goal: Drive Engagement

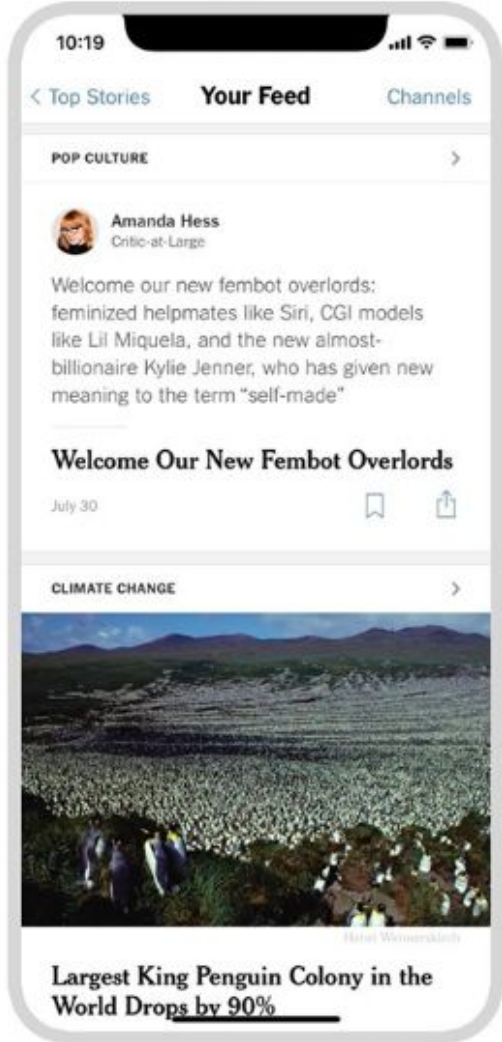
- **Frequency:** more readers engage with us more often.
- **Habit:** readers have multiple moments, and multiple reasons to engage with us each day.
- **Relevance:** each session reveals something of importance to each reader.
- **Discovery:** readers are often surprised and delighted by what we present to them.

Recreate the serendipity of the physical paper...

Recommendation Products

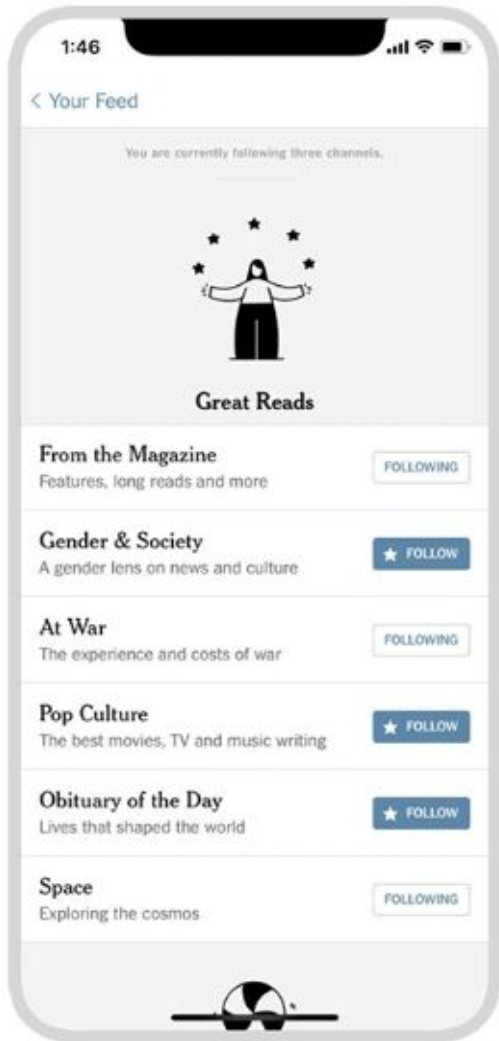
- **Strategic:** understand the role each feature plays in the customer journey.
- **Clear Goals:** know what your metrics are and which you are optimizing for.
- **Actual Products:** not just bolting on personalization. Think like Spotify:





For You

- **Second tab** in the native apps, algorithmically programmed from explicit and implicit signals
- **User need** is discovery, relevance, second reason to come back
- **Metric** is sessions with/without engagement
- **Re-engagement** through email, push notifications coming



Follow Mechanic

- **Follow Channels** to start
- **Channels** are around 50 editorially defined, dynamic topics
- **Algorithmic recommendation** is layered in as we learn more about reading habits
- **Netflix** uses a similar approach in their onboarding

From Recommendations to an AML program

Applied Machine Learning Program

Mission Lead -
Data Scientist

Engineering
Lead

Team 1
Algorithmic
Recommendation

Team 2
Targeted Offers

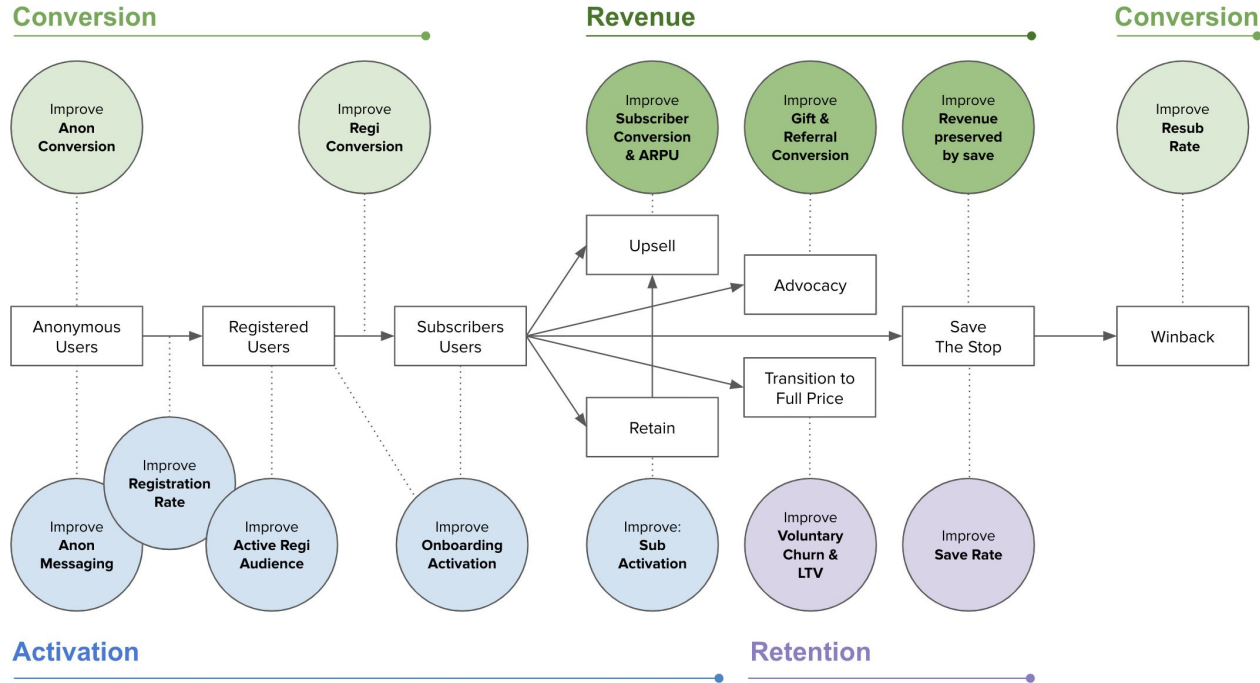
Team 3
New Products

Team N...

Machine Learning Platform: Data Collection, APIs, Metadata Management, Model Deployment

Data Science / Engineering partnership, teams oriented around key, impactful problems, leveraging a shared machine learning platform.

Algorithmic Targeting



- 128% boost in LTV on upsell from core product thank you page.

New Products: Cooking Recirc Test

 **Cooking**

🔍 What would you like to cook?

HIGH HOLY DAYS

COOKING GUIDES

YOUR RECIPE BOX



Spinach Gnocchi
By Martha Rose Shulman

About 30 minutes, ...



Ricotta Gnocchi With Parsley Pesto
By David Tanis

40 minutes, plus ch...



Potato Cavatelli
By Kim Severson

45 minutes



Ricotta Dumplings With Buttered Peas
By Alison Roman

30 minutes



Ricotta Cheese Gnocchi

MARK BITTMAN



YIELD 4 servings

TIME 45 minutes to 1 hour

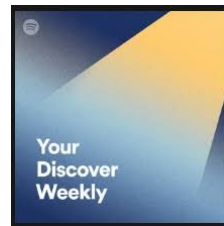


- 11% lift in overall recirc rate from recipe pages, with a 33% lift in the fraction of the recirc that comes from the ribbon.

The Real Goal

Recommendation is a Dance

- The Tyranny of Preference: do we want similarity or discovery?
- Relevant Garbage: how to drain the Internet swamp
- The Filter Bubble: what are our expectations?



"I value that about the NYT: it's not customized to me. I don't think an unbiased news source should be."

-- Maia, RA, Chicago

Our Values: Curiosity

- Independence
- Integrity
- **Curiosity**
- Respect
- Collaboration
- Excellence



“

Open-minded inquiry is at the heart of our mission. In all our work, we believe in continually asking questions, seeking out different perspectives and searching for better ways of doing things. ”

Our Values: Respect

- Independence
- Integrity
- Curiosity
- **Respect**
- Collaboration
- Excellence



“

We help a global audience understand a vast and diverse world. To do that fully and fairly, we treat our subjects, our readers and each other with empathy and respect. ”

Let's use recommendation to reward curiosity, to show respect, and to build trust.

- Can we meet each reader halfway? In the world, in their journey, in each moment?
- Can we use the machinery of engagement to build a virtuous habit, a habit of curiosity?
- Could that habit condition and generate trust?
- And could that curiosity and that trust in turn help, in a small way, to engender a more compassionate and just world?

