

DATA IS BUSINESS

BUSINESS IS DATA

JASON BELL - JUNE 2023

YOUR DATA IS LEVERAGE

LLM'S ARE OVERRATED

AND ENVIRONMENTALLY

BAD!

A woman with long, wavy brown hair is smiling warmly at the camera. She is wearing a dark, sleeveless top. The background is dark and slightly out of focus, showing some foliage or leaves.

I'm not used to being out in public.

“We could have an optimum opportunity to talk about and propose new green designs and renewable energy for a lot of commonly used technology, as well as those to train monolithic algorithms”: Clarissa Bell

CHATGTP & RUBIK'S CUBES: AI & THE CARBON PUZZLE

NOVEMBER 2010



ASKED THIS PERSON.



THIS PERSON.

**“CAN YOU SIT ON A
PANEL?**

**YOU CAUSE TROUBLE
ON PANELS”**

**“IF I GAVE YOU £100
WHAT WOULD YOU
INVEST IT IN?”**

KEVIN PARKER @BIZTECHFUTURIST

**“DATA IS THE NEW OIL, IN THE
NEXT TEN YEARS IT WILL BE THE
WORLD’S MOST VALUABLE
NATURAL RESOURCE”**

JASE BELL. WHO GOT SOME FUNNY LOOKS ON THAT PANEL

YOUR DATA IS LEVERAGE

SO, WHAT IS DATA?

**DATA ARE UNITS OF INFORMATION, OFTEN
NUMERIC, THAT ARE COLLECTED THROUGH
OBSERVATION.**

ONCE WE HAVE DATA WE CAN DO STUFF



(Here's where the
magic happens.)

**THE MORE DATA = MORE INFORMATION
AND
INFORMATION RESOLVES **UNCERTAINTY**.**

STRUCTURED DATA

**HIGHLY ORGANISED INFORMATION LIKE DATES, PHONE NUMBERS, POSTCODES AND CUSTOMER NAMES.
EASY TO IMPORT INTO TOOLS AND EASILY SEARCHABLE.**

UNSTRUCTURED DATA

**TEXT FILES, EMAIL CONTENT, MULTIMEDIA (IMAGE, VIDEO) AND LOG FILES.
USUALLY NEEDS SOME PREPARATION AND CLEANING BEFORE ANY ANALYSIS CAN BE DONE.**

WHAT IS OUR AIM WITH DATA?

*'Technology
is the key
to building
one-to-one
relationships
at scale'*

a post on her Instagram account, 400,000 personal followers what they thought the company should make next. "Someone asked us if we could make Milky Jelly lube," she says. "And I was like, that's actually a really good idea." In the past year, Glossier has hired a new CTO, chief financial officer and head of marketing to expand its leadership team. In terms of growth, Weiss says the company's focus for now is to be "more international," with expansion in the US and plans to open retail stores in the UK, Ireland, Canada, Australia, New Zealand, France, and Japan.

Glossier.



EMILY WEISS AND THE GLOSSIER TEAM NAIL IT.

Technology
is the key
to building
one-to-one
relationships
at scale'

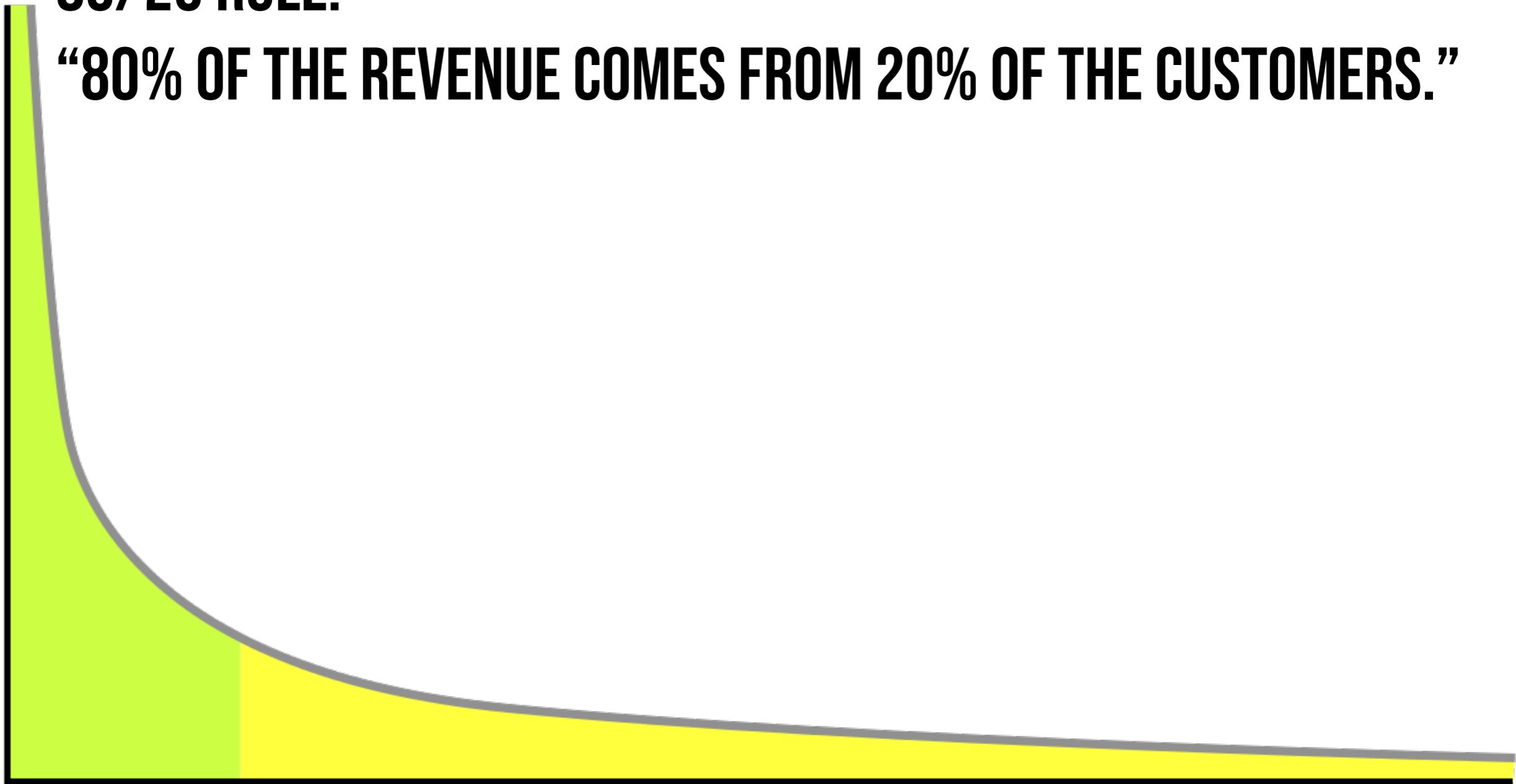
to have beauty experience
beauty products, versus it's
it's combining those things
in a way that feels very
community, versus

In the past year,
hired a new CTO,
officer and head
expand its leader-

In terms of growth,
Weiss says the company's
for now is to be
more people in the US and
ships to the UK, Ireland
France, and

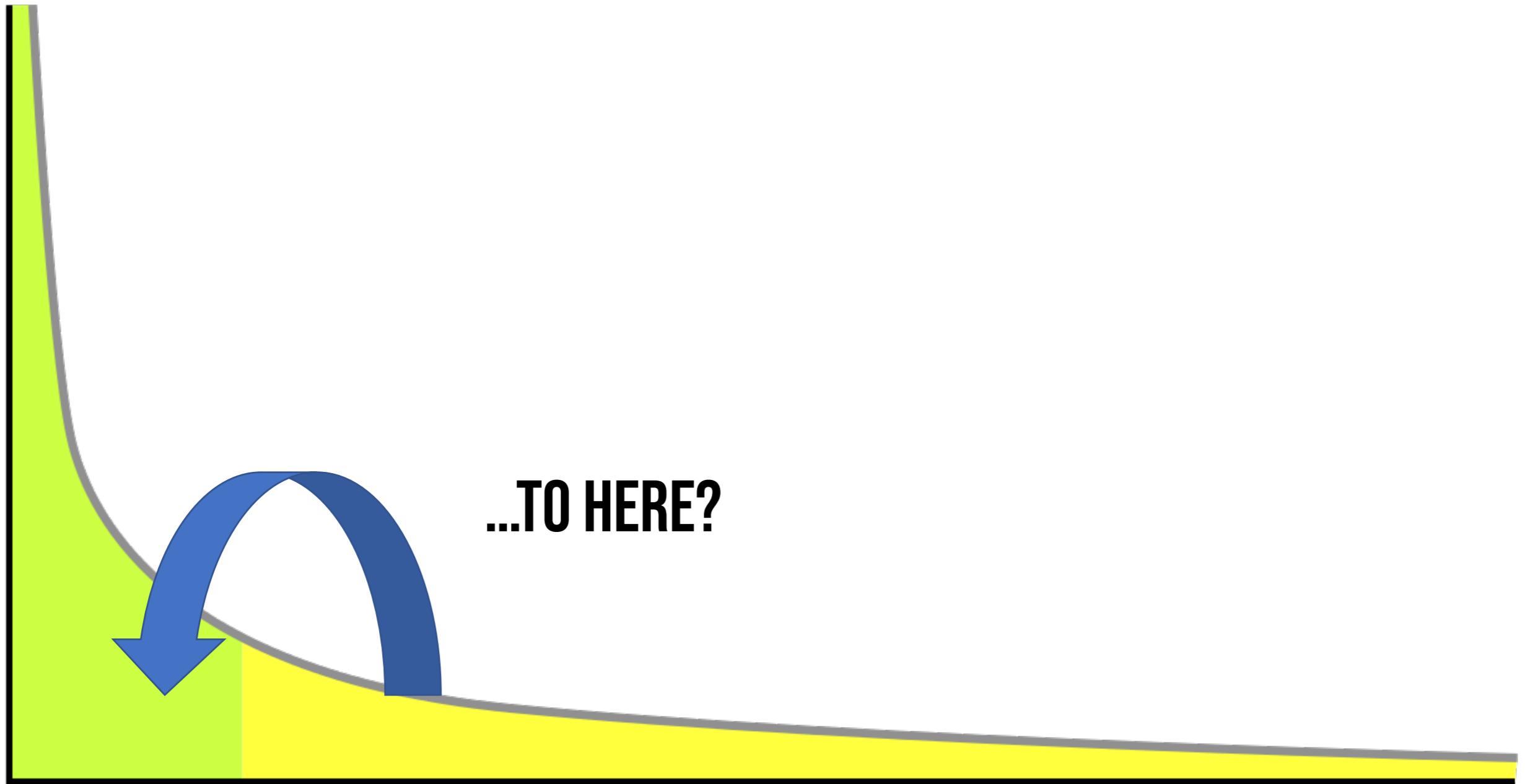
80/20 RULE:

“80% OF THE REVENUE COMES FROM 20% OF THE CUSTOMERS.”





QUESTION:
HOW DO YOU GET THESE CUSTOMERS FROM HERE.....





**TARGETING HERE MAYBE A
WASTE OF MONEY, TIME AND
EFFORT.**

**INFLUENCING BEHAVIOUR WITH
DATA IS NOT A NEW THING**

SIMULATICS CORPORATION

**THE FIRST “DATA SCIENCE” COMPANY
(1952)**

INFLUENCING BEHAVIOUR WITH DATA IS NOT A NEW THING

SIMULATICS CORPORATION

**“EDWARDS GREENFIELD WAS A PASSIONATE LIBERAL AND CIVIL
RIGHTS ACTIVIST. HE WANTED TO USE ANALYTICS AND
TECHNOLOGY TO HELP DEMOCRATS OF THE 1950S AND 1960S
ERASE THE TECHNOLOGY ADVANTAGE THEN ENJOYED BY
REPUBLICANS.”**

YOUR DATA IS LEVERAGE

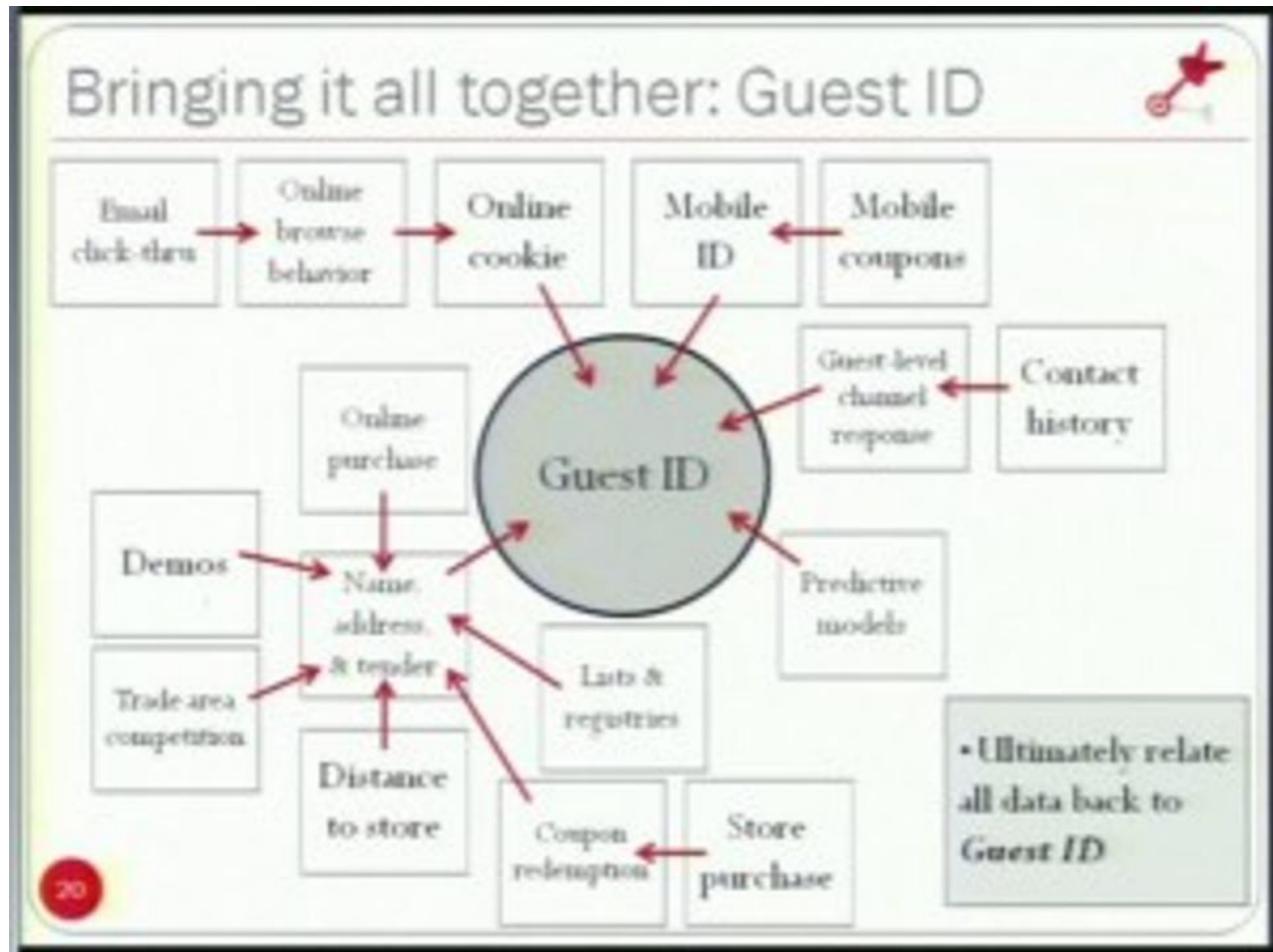
DATA AS LOYALTY

SO YOU WANT STUFF? WE NEED TO KNOW SOME THINGS FIRST.

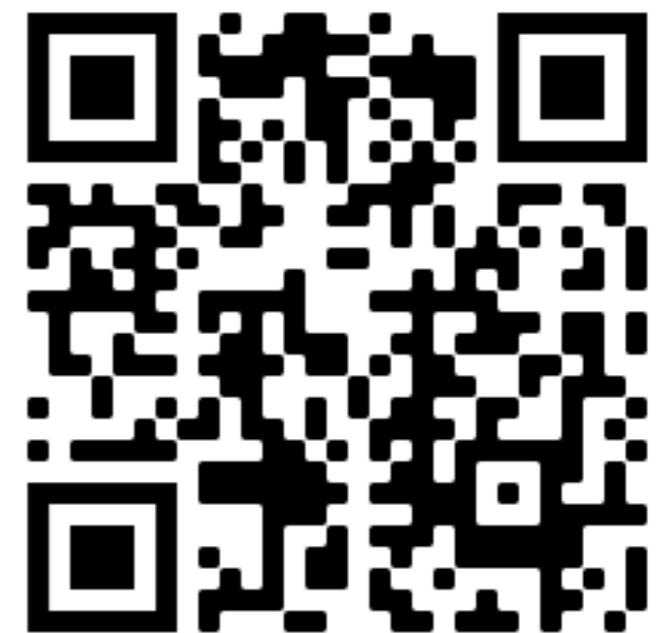


**TO START TRACKING LOYALTY
THERE IS ONE THING YOU NEED**

THE CUSTOMER UUID



38e953c6ef7bab5a1f01ee0a132bf293



38e953c6ef7bab5a1f01ee0a132bf293

**WITHOUT AN ID, YOU DO NOT KNOW WHO IS DOING
WHAT, AND WHEN THEY ARE DOING IT**

AND DO NOT USE THE EMAIL ADDRESS AS AN ID



**IT'S ALL ABOUT
THE CUSTOMER.**

**SO WE NEED
THEM ON-BOARD.**

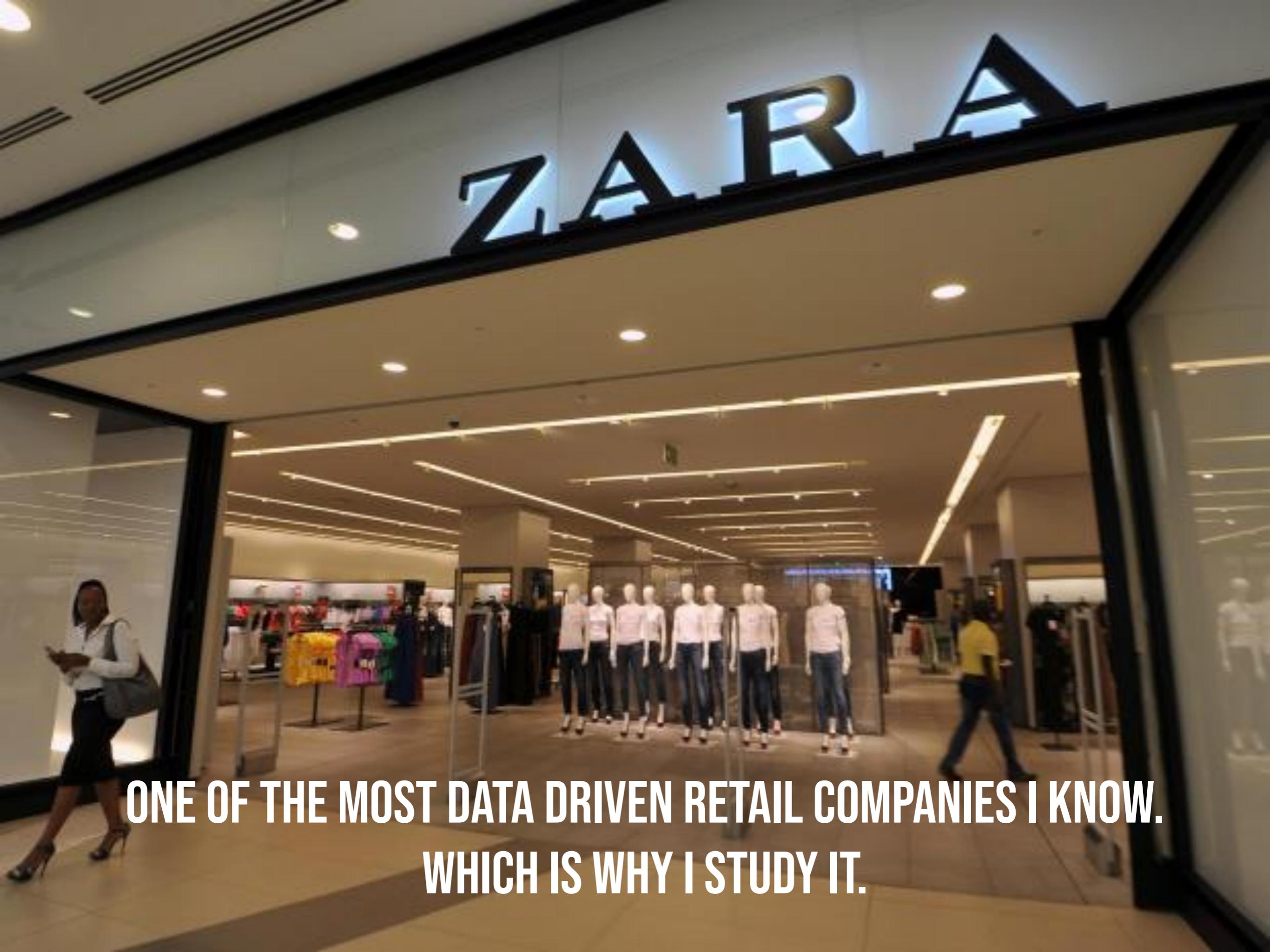
**CREATE A CULTURE OF
COLLECTING YOUR OWN
DATA**

K.I.S.S.

(KEEP IT SEPARATE,
STUPID)

YOUR CUSTOMER'S DATA IS EVERYTHING.

- POINT OF SALE DATA**
- IN STORE CUSTOMER CONVERSATIONS**
- LOCATION AND WEATHER DATA**
- SOCIAL DATA**
- AND ANYTHING ELSE YOU THINK'S USEFUL**



ZARA

ONE OF THE MOST DATA DRIVEN RETAIL COMPANIES I KNOW.
WHICH IS WHY I STUDY IT.

YOUR CUSTOMER'S DATA IS EVERYTHING.

- POINT OF SALE DATA
- IN STORE CUSTOMER CONVERSATIONS
- LOCATION AND WEATHER DATA
- ~~SOCIAL DATA~~
- AND ANYTHING ELSE YOU THINK'S USEFUL

SOCIAL MEDIA RARELY DRIVES SALES.

CONVERSION RATES ARE RUBBISH ~0.03%
AND YOU ARE NOT IN CONTROL OF WHO SEES WHAT
(ON INSTAGRAM MOST PEOPLE WON'T SEE IT)

PART 1

ALL HAIL THE HUMBLE STAMPCARD

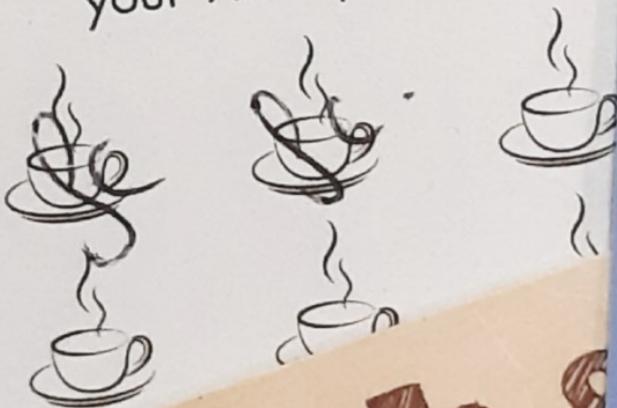
BITS OF CARDBOARD CAN HOLD VALUABLE INFORMATION.



Culture Coffee
SHOP

Customer Loyalty Card

Buy 8 coffees and receive
your 9th cup **FREE**



bop's
Loyalty C

OH O

CAFFÈ
NERO

HAVE YOUR 10TH COFFEE
ABSOLUTELY FREE



COLLECT STAMPS & PAY WITH YOUR PHONE
DOWNLOAD OUR APP NOW

NOT FOR RESALE

enjoy in all our stores

WITH SOME THOUGHT WE CAN LEARN A LOT ABOUT A CUSTOMER



Write the date.
14/4 atz.

$$9 \times \text{average spend} \\ 9 \times 2.25 = 20.25$$

20.25 every 18 days

$$= 20 \times 20.25 = 405 \text{ P/S}$$

LOOK MUM, IT'S A SPREADSHEET!

Card Number	Customer Name	Stamp 1	Stamp 2	Stamp 3	Stamp 4	Stamp 5	Stamp 6	Stamp 7	Stamp 8	Stamp 9	Days Active	Estimated Cards/Yr	Annual LTV
1	Jase B.	2021/03/01	2021/03/02	2021/03/03	2021/03/06	2021/03/07	2021/03/08	2021/03/10	2021/03/13	2021/03/16	15	24.33	£492.75
2	David S.	2021/03/01	2021/03/03	2021/03/06	2021/03/07	2021/03/10	2021/03/12	2021/03/13	2021/03/16	2021/03/19	18	20.28	£410.63
3	Charlene A.	2021/03/01	2021/03/03	2021/03/05	2021/03/06	2021/03/09	2021/03/10	2021/03/13	2021/03/15	2021/03/17	16	22.81	£461.95
4	Jenny E.	2021/03/01	2021/03/03	2021/03/04	2021/03/05	2021/03/08	2021/03/09	2021/03/11	2021/03/12	2021/03/15	14	26.07	£527.95
5	Michael M.	2021/03/01	2021/03/02	2021/03/04	2021/03/07	2021/03/10	2021/03/12	2021/03/15	2021/03/18	2021/03/20	19	19.21	£389.01
6	Marty N.	2021/03/01	2021/03/04	2021/03/07	2021/03/08	2021/03/09	2021/03/12	2021/03/15	2021/03/17	2021/03/19	18	20.28	£410.63
7	Marty N.	2021/03/01	2021/03/04	2021/03/07	2021/03/10	2021/03/11	2021/03/14	2021/03/16	2021/03/19	2021/03/20	19	19.21	£389.01
8	Jase B.	2021/03/01	2021/03/02	2021/03/04	2021/03/05	2021/03/07	2021/03/08	2021/03/11	2021/03/12	2021/03/15	14	26.07	£527.95
9	Jase B.	2021/03/01	2021/03/04	2021/03/06	2021/03/09	2021/03/12	2021/03/15	2021/03/16	2021/03/17	2021/03/20	19	19.21	£389.01
10	David	2021/03/01	2021/03/02	2021/03/04	2021/03/05	2021/03/06	2021/03/09	2021/03/11	2021/03/12	2021/03/15	14	26.07	£527.95
11	Charlene A.	2021/03/01	2021/03/02	2021/03/03	2021/03/04	2021/03/07	2021/03/09	2021/03/11	2021/03/12	2021/03/15	14	26.07	£527.95
12	Jenny E.	2021/03/01	2021/03/03	2021/03/05	2021/03/06	2021/03/07	2021/03/09	2021/03/11	2021/03/12	2021/03/14	13	28.08	£568.56
												277.70	£5,623.34
												Avg Days 16.08	

**NO ONE NEEDS THE OPEN BANKING
PROTOCOL TO KNOW WHEN I
BOUGHT A CUP OF TEA**

DO NOT ABUSE THE TRUST OF THE INFORMATION A CUSTOMER IS WILLING TO GIVE.

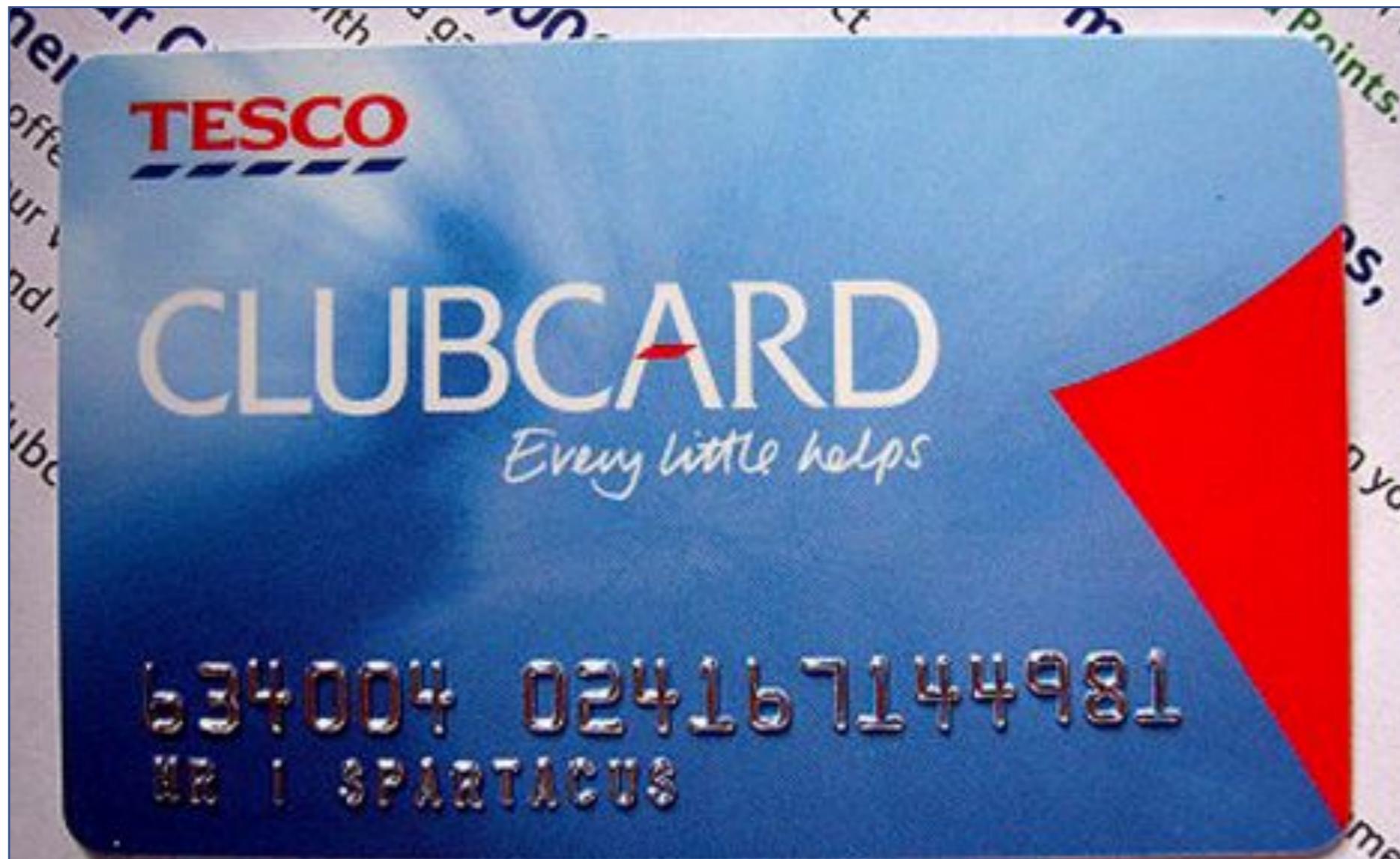
YOUR DATA IS LEVERAGE

PART 2

THE LOYALTY CARD

EVERY LITTLE BIT OF DATA HELPS

LAUNCHED IN 1995 BY THE MARKETING COMPANY DUNN HUMBY



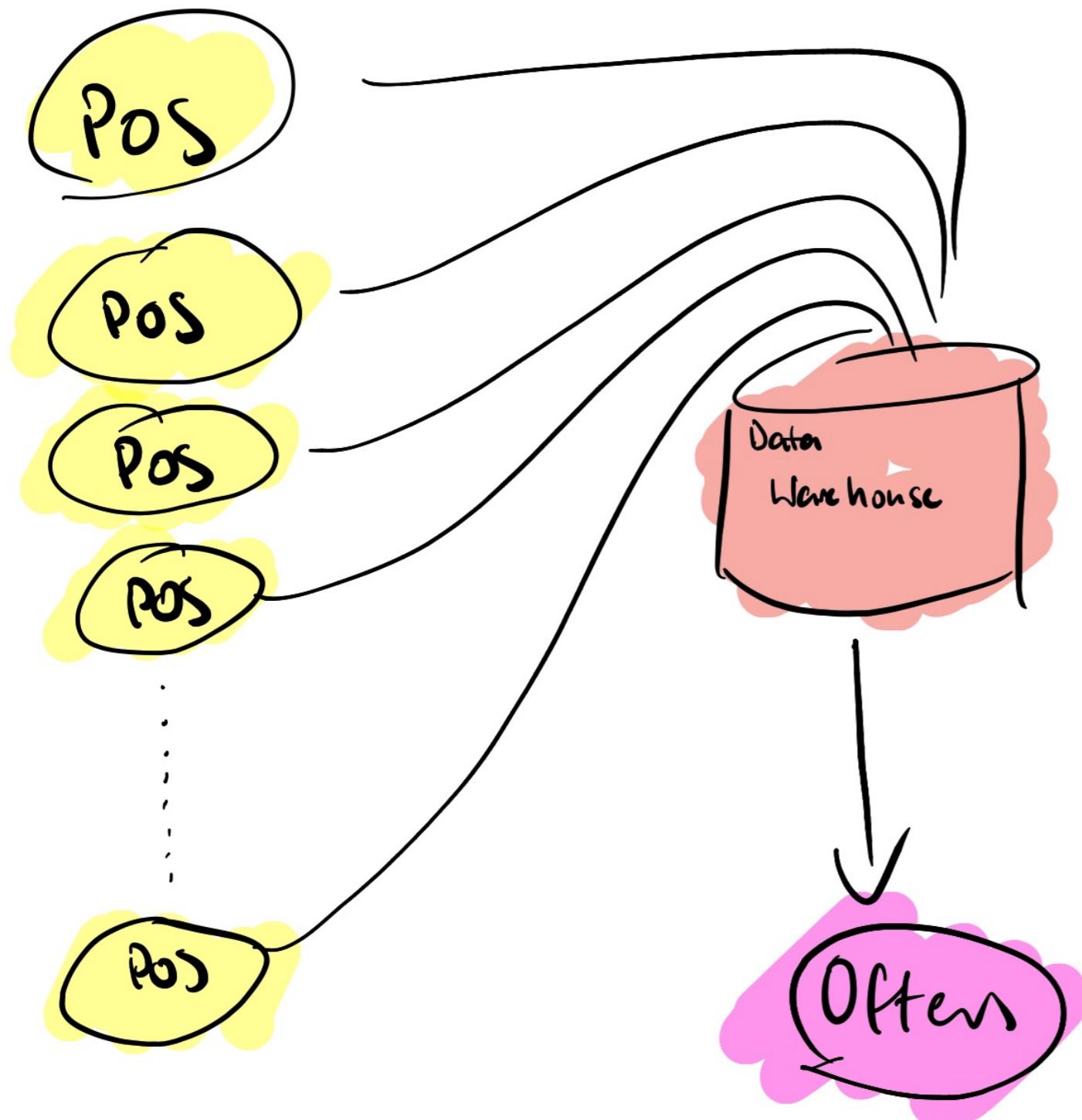
LAUNCHED IN 2002 BY LOYALTY MANAGEMENT GROUP



LAUNCHED IN 2022 BY ASDA



YOU SWIPE, THEY LEARN YOU WILL BE REWARDED



EVERY TRANSACTION IS GOING TO HAVE THE FOLLOWING INFORMATION:

- A CUSTOMER UUID (OPTIONAL)
- ITEM INFORMATION
- PAYMENT TYPE

POS INFORMATION IS COLLECTED AND TRANSMITTED TO A DATA WAREHOUSE.

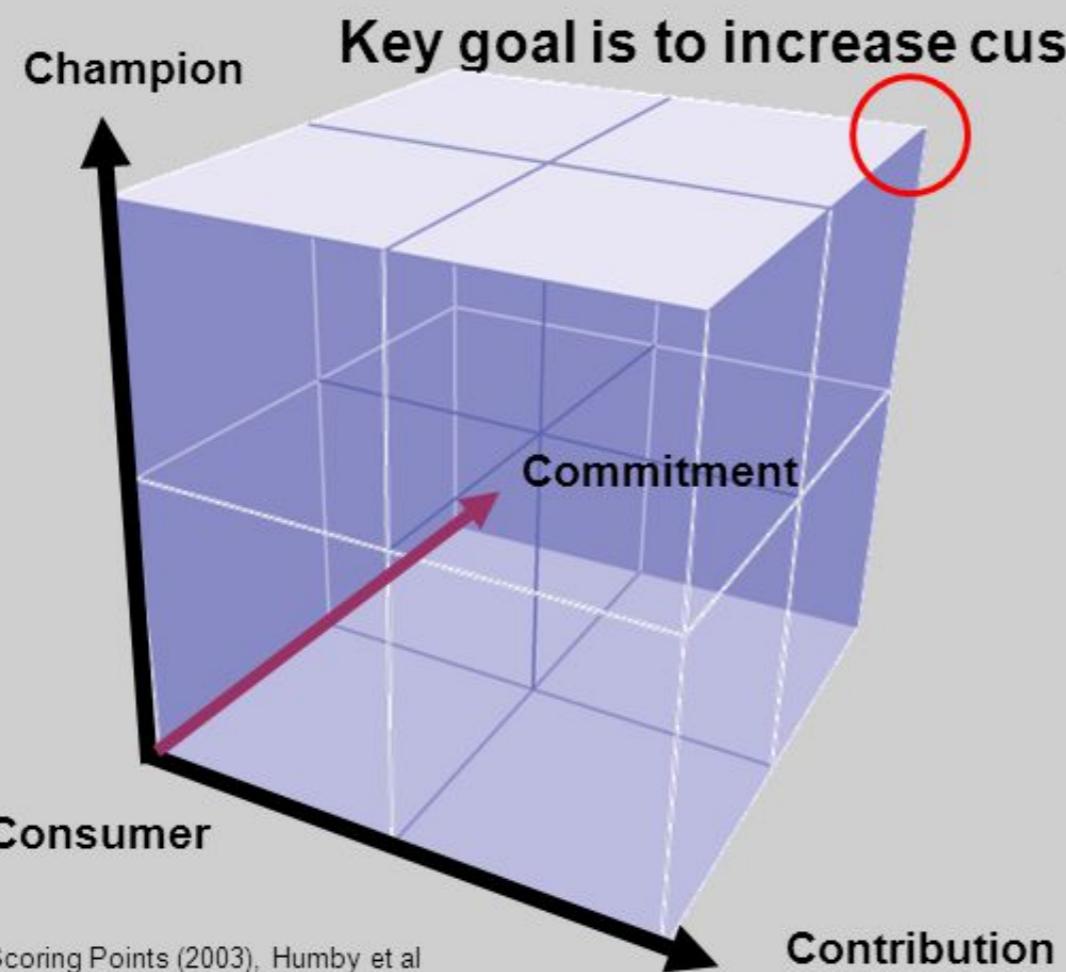
ANALYSIS IS DONE ON EACH TRANSACTION AND SEGMENTED (SLICED AND DICED) BY CUSTOMER, PRODUCT CATEGORY AND SO ON.

VOUCHERS ARE GENERATED BASED ON PREVIOUS SPEND

THERE WAS ALWAYS A PAYOFF, “FOUR CHRISTMASES A YEAR”



Why do retailers invest in loyalty programmes?



Key goal is to increase customer loyalty

All customers can be placed at some point in this 3-D cube

A customer's location in the cube suggests actions suitable to earn his/ her lifelong loyalty

- **Contribution:** profitability today
- **Commitment:** future value
 - likelihood of remaining a customer
 - 'headroom'
- **Championing:** ambassador







IT IS NOT ABOUT HOW MUCH YOU SPEND BUT WHETHER YOU ARE WILLING TO ASSOCIATE WITH THE BRAND.....

YOUR DATA IS LEVERAGE

PART 3

ALGORITHMIC COMMERCE

DO YOU FEEL LUCKY PUNK?

UK & IRELAND. FREE SHIPPING £35+

LOGIN



BIRCHBOX™

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SHOP ▾

GIFT

BOX

MAGAZINE ▾

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SPECTRUM MAKEUP BRUSH IN EVERY FEBRUARY BOX! ➤



LIKE BEAUTY? LOVE BIRCHBOX.

Join the UK's #1 Beauty Box and receive 5 luxe beauty treats delivered monthly!

LEARN MORE

GIFT BIRCHBOX!

$$\max_{\mathbf{B}} \sum_{i=1}^M \sum_{j=1}^N H(i,j) \mathbf{B}(i,j) + F(\mathbf{B})$$

such that

$$\forall i : \sum_{j=1}^N \mathbf{B}(i,j) \leq q_i$$

and

$$\forall j : \sum_{i=1}^M \mathbf{B}(i,j) = n, \quad \forall i, j : \mathbf{B}(i,j) \geq 0.$$

$$\max_{\mathbf{B}} \sum_{i=1}^M \sum_{j=1}^N H(i,j) \mathbf{B}(i,j) + F(\mathbf{B})$$

such that

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and

$$\forall j : \sum_{i=1}^M \mathbf{B}(i,j) = n, \quad \forall i, j : \mathbf{B}(i,j) \geq 0.$$

“DOES PRODUCT (J) GIVE HAPPINESS TO CUSTOMER (I).”

$$\max_{\mathbf{B}} \sum_{i=1}^M \sum_{j=1}^N H(i,j) \mathbf{B}(i,j) + F(\mathbf{B})$$

such that

$$\forall i : \sum_{j=1}^N \mathbf{B}(i,j) \leq q_i$$

and

$$\forall j : \sum_{i=1}^M \mathbf{B}(i,j) = n, \quad \forall i, j : \mathbf{B}(i,j) \geq 0.$$

**“DOES PRODUCT (J) GO IN THE BASKET OF CUSTOMER (I)”
BINARY OPERATION, IT’S YES OR NO.**

**FEELING ADVENTUROUS?
HOW ABOUT WE CHOOSE FOR YOU?
DO YOU FEEL REALLY REALLY LUCKY PUNK?**

Get Fix deliveries when you want them

We're not a subscription service. Book a Fix when you want one or set up regular deliveries, it's up to you. Change or cancel any time.

Save me time by sending Fix deliveries on a timetable.

EVERY 2-3 WEEKS

Keep me on-trend
with new looks.

EVERY MONTH

— POPULAR —
Update my wardrobe
regularly.

EVERY 2 MONTHS

Elevate my wardrobe
throughout the year.

EVERY 3 MONTHS

Change my wardrobe
seasonally.

We'll send you Fix deliveries at the frequency you choose until you change your account settings, which you may do any time. Before each Fix is styled, you'll pay a £10 styling charge, which will be deducted from the cost of any items you purchase.

[Continue](#)

PART 4

DATA ETHICS

WHEN IT ALL STARTS TO GET A BIT CREEPY.

**IF YOU ARE THE DATA OWNER, DO
NOT CROSS THE CREEPY LINE!**

**FREE USE COMES AT A COST
(YOUR DATA)**



ARPED ELO CREATED THE ELO RATING SYSTEM FOR CHESS PLAYERS

$$r(\text{new}) = r(\text{old}) + k(S - \mu)$$



$$r(\text{new}) = r(\text{old}) + k(S - \mu)$$

LOOKS SIMPLE ENOUGH, CAN'T BE THAT HARMFUL JASE?

THERE IS A LIVE MATCH BETWEEN TWO PLAYERS

PLAYER 1 RATING = 1200

PLAYER 2 RATING = 1000

CALCULATE THE PROBABILITY OF THE PLAYERS WINNING:

P1 = $(1.0 / (1.0 + \text{POW}(10, ((1000-1200) / 400)))) = 0.76$

P2 = $(1.0 / (1.0 + \text{POW}(10, ((1200-1000) / 400)))) = 0.24$

AND ASSUME CONSTANT K=30

CASE-1 : SUPPOSE PLAYER 1 WINS:

$$\text{RATING1} = \text{RATING1} + K * (\text{ACTUAL} - \text{EXPECTED}) = 1200 + 30(1 - 0.76) = 1207.2$$

$$\text{RATING2} = \text{RATING2} + K * (\text{ACTUAL} - \text{EXPECTED}) = 1000 + 30(0 - 0.24) = 992.8$$

CASE-2 : SUPPOSE PLAYER 2 WINS:

$$\text{RATING1} = \text{RATING1} + K * (\text{ACTUAL} - \text{EXPECTED}) = 1200 + 30(0 - 0.76) = 1177.2$$

$$\text{RATING2} = \text{RATING2} + K * (\text{ACTUAL} - \text{EXPECTED}) = 1000 + 30(1 - 0.24) = 1022.8$$

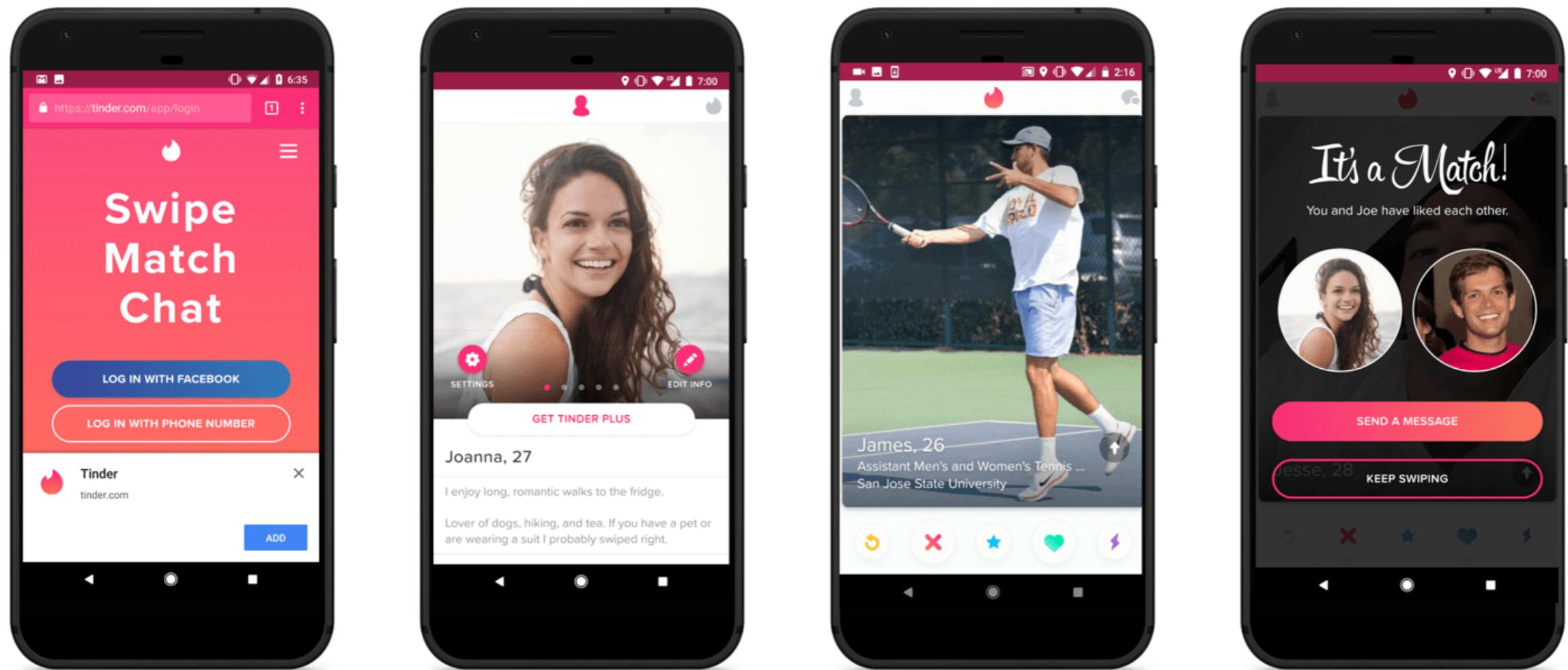
**COULD THIS BE APPLIED
ANYWHERE ELSE?**

SWIPE RIGHT

WIN!

SWIPE LEFT

LOSE!



SOME OF THEIR USERS LIKE CHESS, RIGHT? LET'S USE ELO!

**ALL THIS DATA IS GREAT UNTIL
SOMEONE STARTS ASKING QUESTIONS**



THE 800 PAGES OF DATA THAT TINDER
HAD ON JUDITH DUPORTAIL'S PROFILE.

FROM THE PROGRAMME "CONNECTED" ON NETFLIX

**BE UPFRONT ABOUT HOW
YOU USE THEIR DATA.**

PART 5

MACHINE LEARNING?

NOTICED HOW I HAVEN'T MENTIONED IT YET? I CAN'T AVOID IT THOUGH.

**IT'S OLD! BEEN AROUND SINCE THE
1950'S**

IT'S ONLY NOW WE HAVE THE PROCESSING POWER TO DO THINGS AT SCALE

MACHINE LEARNING IS NOT PERFECT.



SUPERVISED LEARNING

WITH THIS DATA WE ALREADY KNOW THE TARGET OUTCOME.

UNSUPERVISED LEARNING

WITH THIS DATA WE DON'T KNOW THE TARGET OUTCOME.

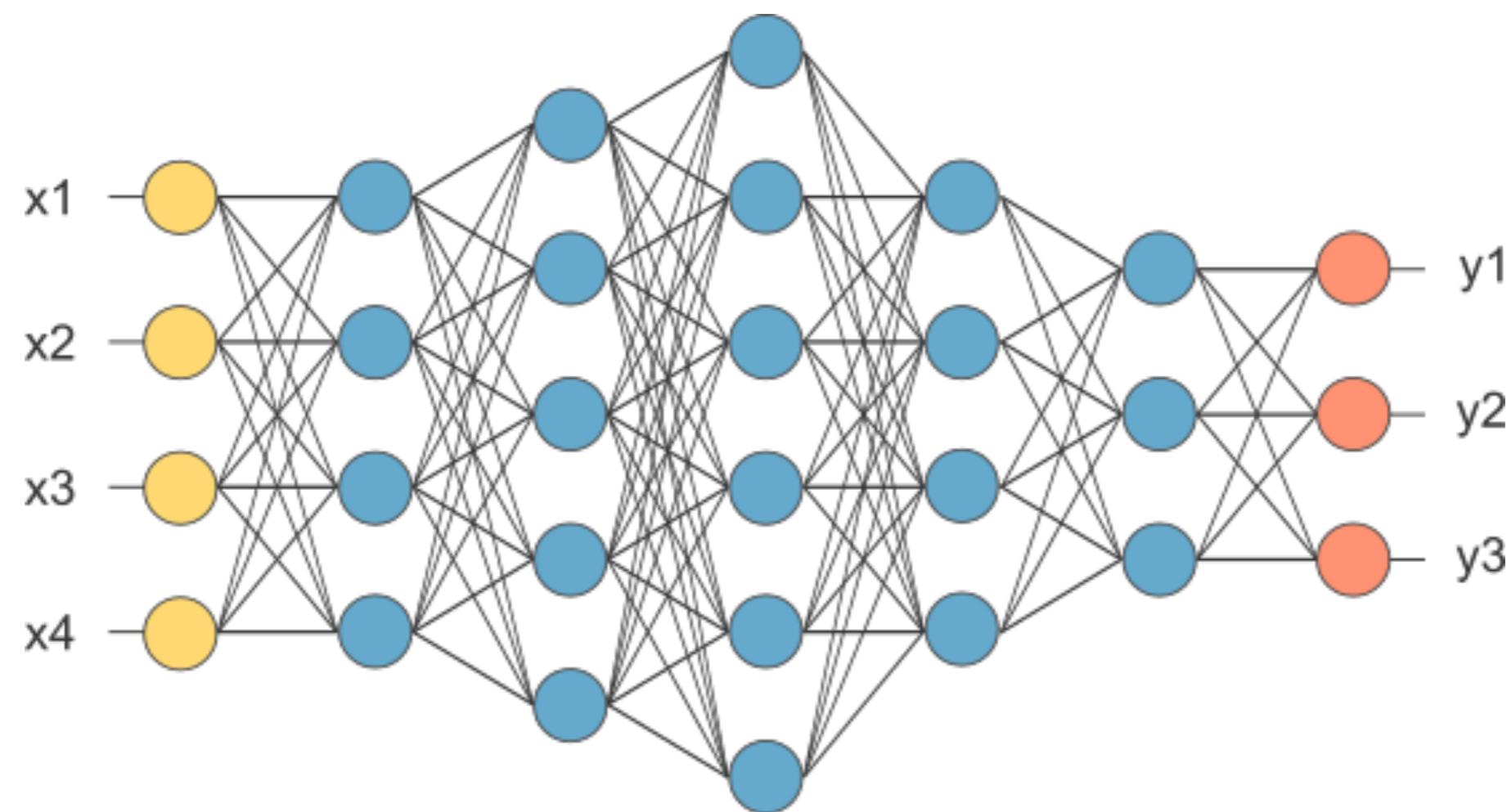
REINFORCEMENT LEARNING

TRAINES ITSELF WITH TRAIL AND ERROR

**WITH MACHINE LEARNING YOU ARE
TRYING TO **CLASSIFY** SOME
INFORMATION OR **PREDICT** AN OUTCOME**

CAN I **PREDICT** WHO'LL USE MY OFFER?

THE MORE DATA YOU HAVE THE MORE **CONFIDENCE** YOU'LL HAVE IN
THE PREDICTION.



**MOST STARTUPS DON'T HAVE ENOUGH
DATA TO USE MACHINE LEARNING
EFFECTIVELY**

YOUR DATA IS LEVERAGE

YOUR DATA JOURNEY STARTS HERE

- **START SIMPLE** - BITS OF PAPER DO WORK
- ONCE YOU ARE WASTING TIME **SCALE UP.**
- BE **UPFRONT** ON HOW YOU ARE GOING TO USE THE DATA
- MAKE SURE THERE'S A **PAYOUT**
- **DON'T BE CREEPY** WITH CUSTOMERS BASED ON WHAT YOU KNOW
- MACHINE LEARNING IS **NOT 100% ACCURATE**, EVER. IF IT IS, QUESTION IT.



uvoucherapp

:

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is the key
to building
one-to-one
relationships
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a post on her Instagram account, she asked 100,000 personal followers what they thought the company should make next. "Someone asked us if we could make Milky Jelly lube," she says. "And I was like, that's actually a really good idea."

channels, from the ability to book offline experiences. "It's more of a hybrid," she says. "It's not just a networking site, it's not a commerce site, it is a beauty community to have beauty enthusiasts buy beauty products, learn about it's combining those communities in a way that feels very much like a community, versus so many other sites."

In the past year, the company has hired a new CTO, chief marketing officer and head of design to expand its leadership team.

In terms of growth, Weiss says the company's focus for now is to be "more international", with expansion in the US and beyond. It already has relationships to the UK, Ireland, Australia, France, and Germany.

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THANK YOU