No Design Future without Data

Maximilian Schmidt
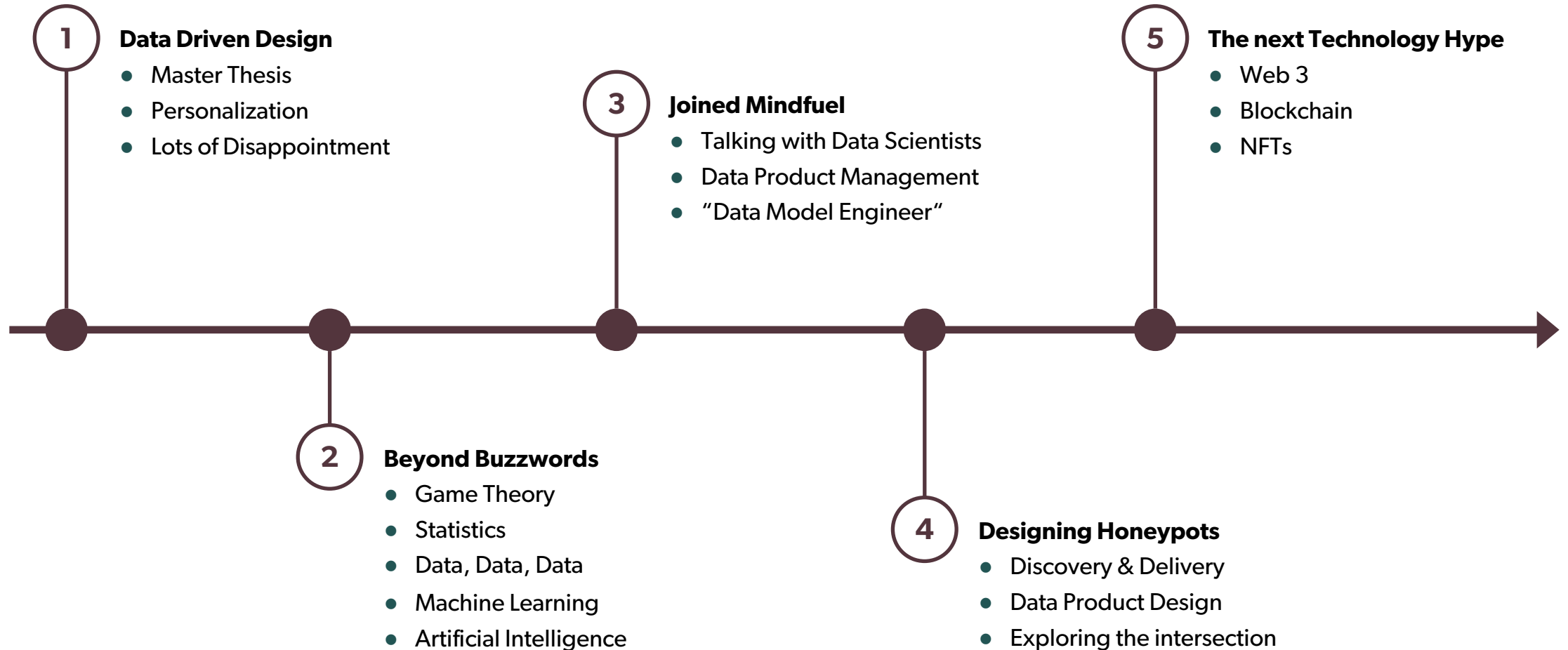
Are you data-savvy?

Regularly talking to a data scientist?

Tasted the sweet honey between data &design?

Why listen to me now?

My Journey

1 Data Driven Design
- Master Thesis
- Personalization
- Lots of Disappointment

2 Beyond Buzzwords
- Game Theory
- Statistics
- Data, Data, Data
- Machine Learning
- Artificial Intelligence

3 Joined Mindfuel
- Talking with Data Scientists
- Data Product Management
- "Data Model Engineer"

4 Designing Honeypots
- Discovery & Delivery
- Data Product Design
- Exploring the intersection

5 The next Technology Hype
- Web 3
- Blockchain
- NFTs

Designing Honeypots

I changed. Three simple steps. So can you.

ONE	TWO	THREE

Buzzwords

- Look beyond buzzwords.
- Grasp the most important concepts.
- Revisit again.

Discovery

- Talk & listen to data people.
- Ask stupid questions. Understand.
- Get help!

Kickstart

- Data driving research.
- Data supporting decision.
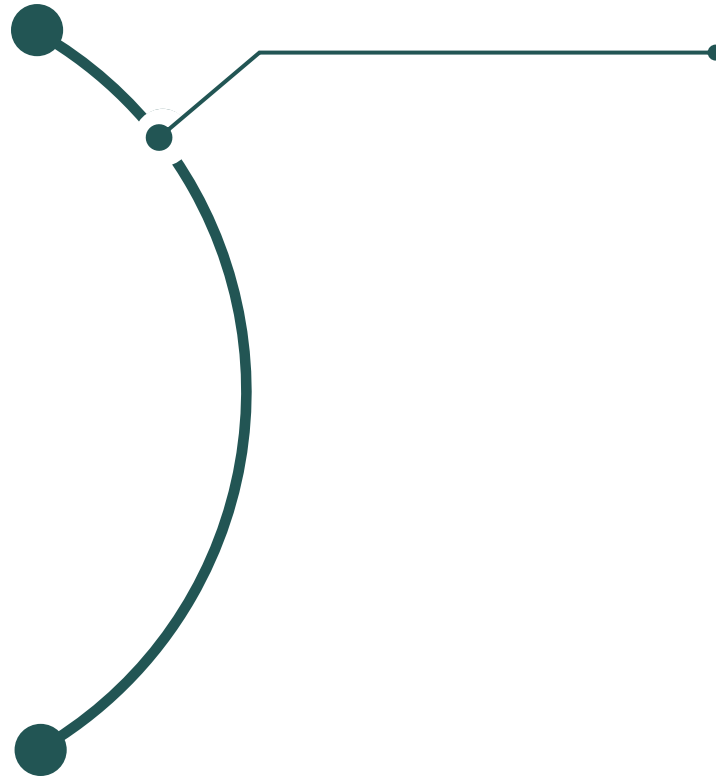- Data features enhancing product.

Buzzwords

Step One

Put your dinner aside for a moment
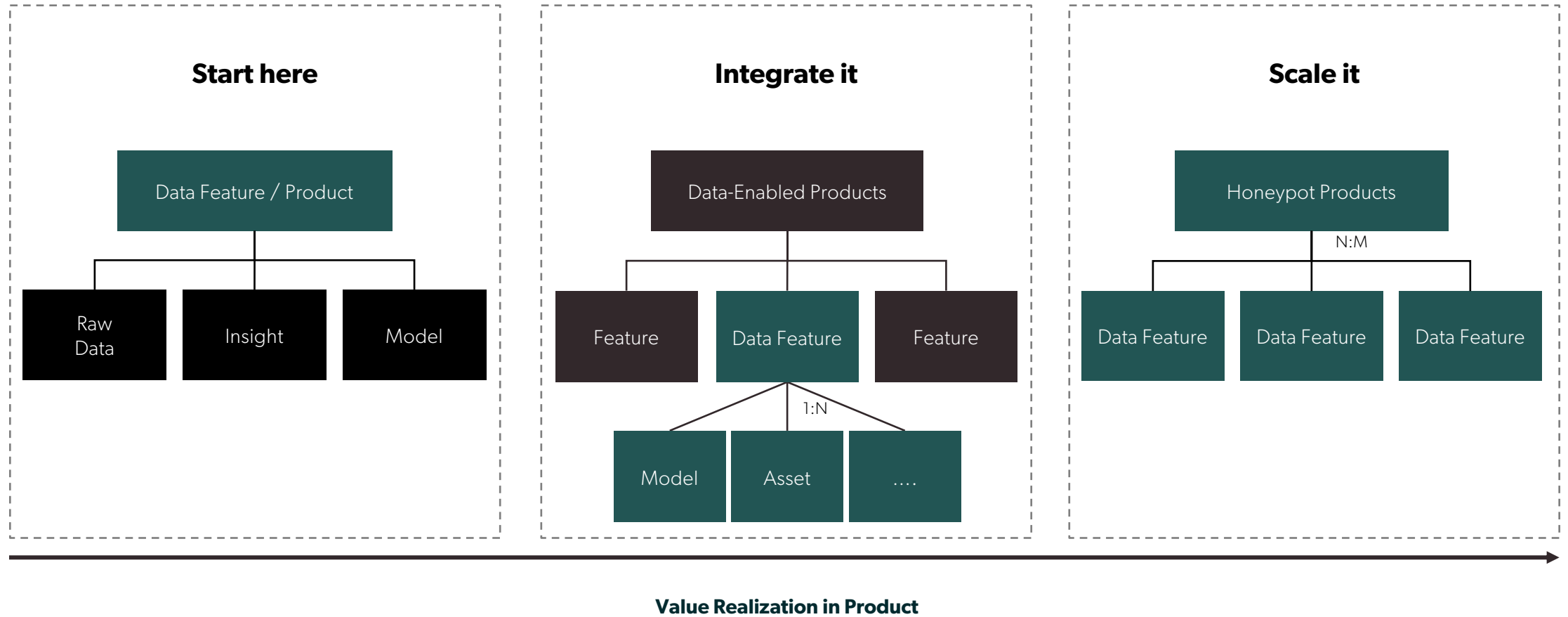
Keep this at your disposal
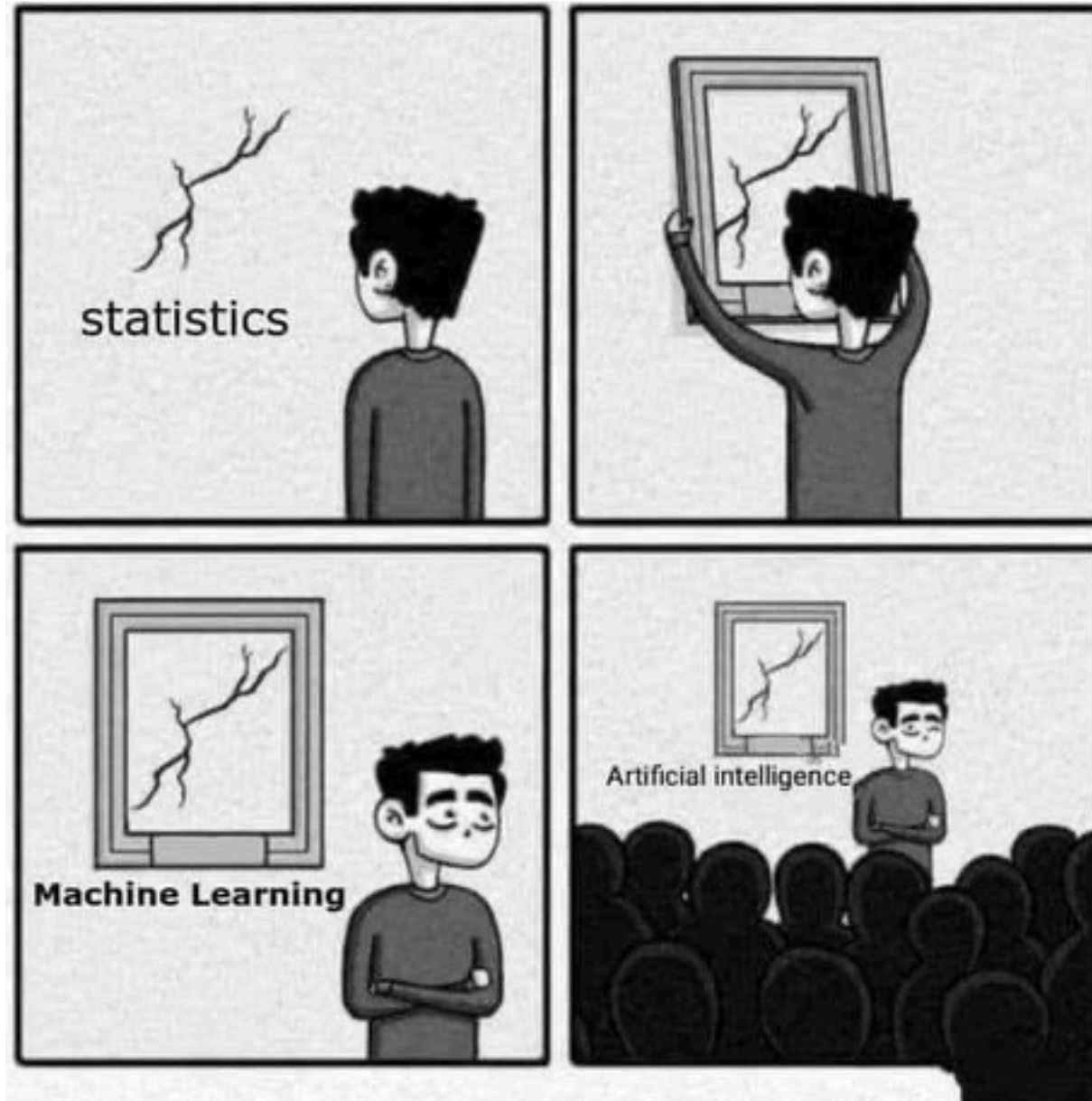

Smartphone or Computer

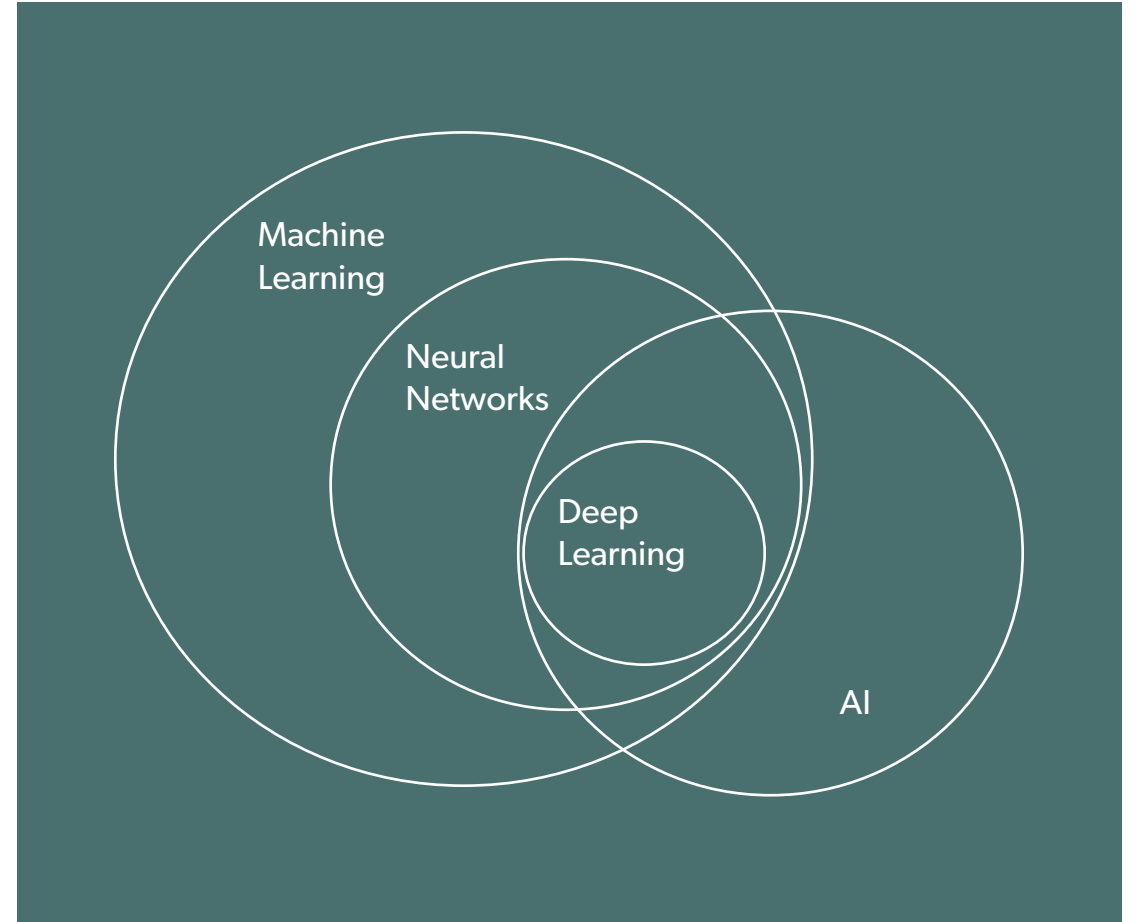Go to the website **www.menti.com**

Enter the code **6268 3143**

Data

Start here

Data Feature / Product

Raw Data | Insight | Model

Integrate it

Data-Enabled Products

Feature | Data Feature | Feature

1:N

Model | Asset | ....

Scale it

Honeypot Products

N:M

Data Feature | Data Feature | Data Feature

Value Realization in Product

Data Science

Statistics

Data Science

Computer Science

Machine Learning
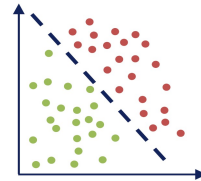
Neural Networks

Deep Learning

AI

Machine Learning

Supervised
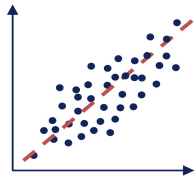
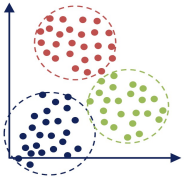Regression — Predict a numerical variable

Classification — Classify Data into categories
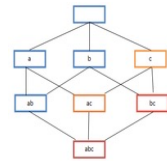
Supervised Learning
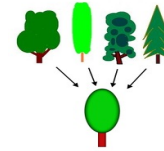Model finds links between some input variables and an explicit target variable

Unsupervised

Clustering — Cluster similar observations into groups

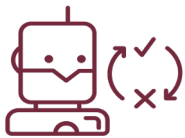Association — Discover strong rules in data

Generalization — find efficient data encodings

Unsupervised Learning
Model decides suitable target variables itself, thereby detecting unspecified clusters and patterns
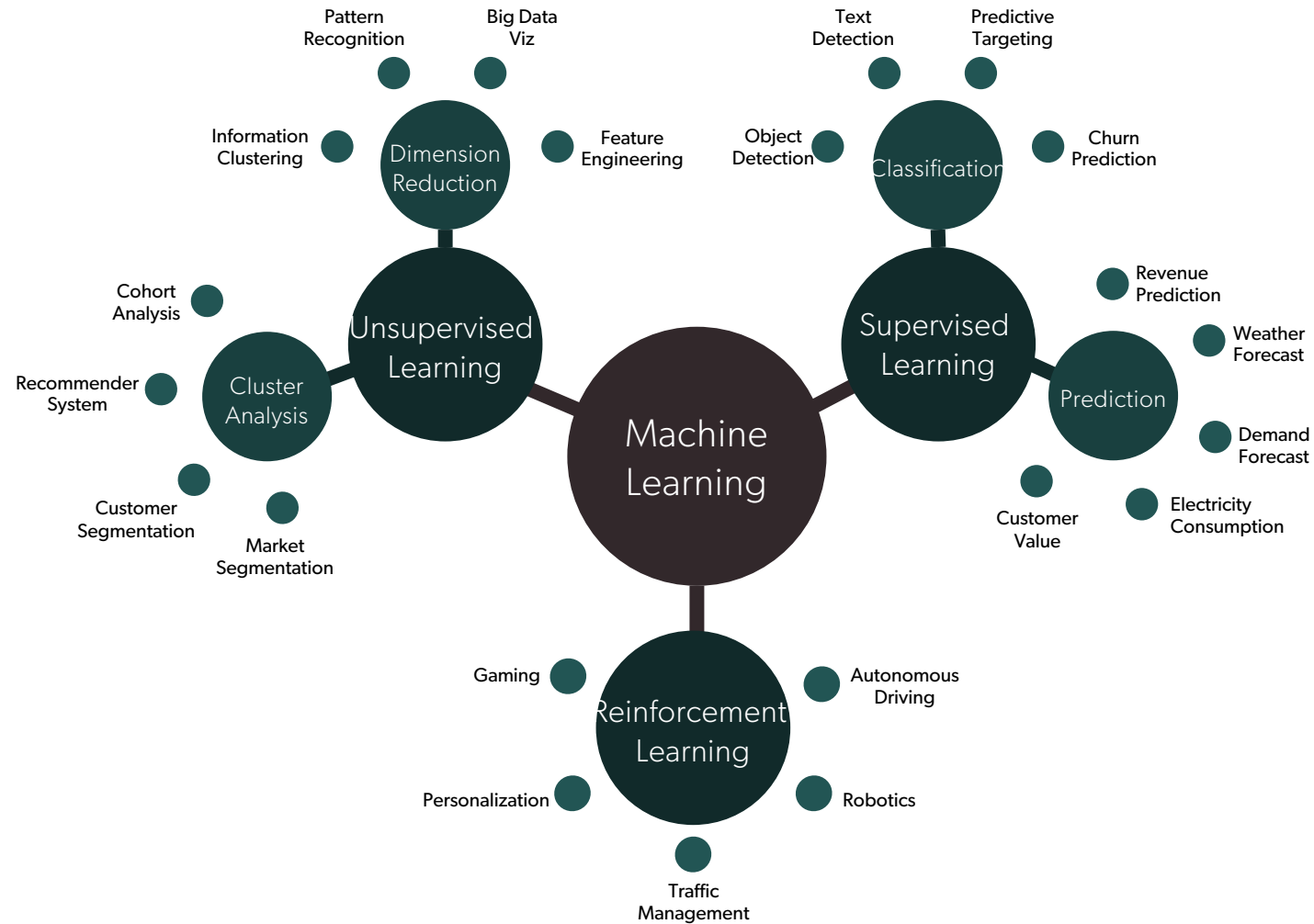
Reinforcement

Behaviour Optimization — Agents optimize actions in defined environments

Reinforcement Learning
Model explores best actions based on reward or punishment in a lab environment

Machine Learning

Pattern Recognition

Big Data Viz

Information Clustering

Dimension Reduction

Feature Engineering

Text Detection

Predictive Targeting

Object Detection

Classification

Churn Prediction

Cohort Analysis

Unsupervised Learning

Supervised Learning

Revenue Prediction

Recommender System

Cluster Analysis

Machine Learning

Prediction

Weather Forecast

Customer Segmentation

Demand Forecast

Market Segmentation

Customer Value

Electricity Consumption

Gaming

Reinforcement Learning

Autonomous Driving

Personalization

Robotics

Traffic Management

Artificial Intelligence
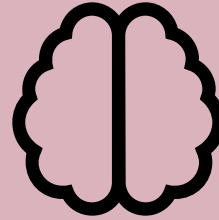
The way ahead is long.

Artificial Narrow Intelligence (ANI)

Stage - 1
- Solves a constrained range of tasks
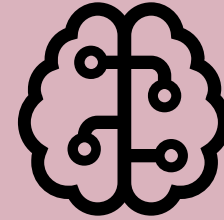- Weak AI
- Chess, Siri

Artificial General Intelligence (AGI)

Stage - 2
- Performs any task a human can
- Strong AI
- Does not exist yet
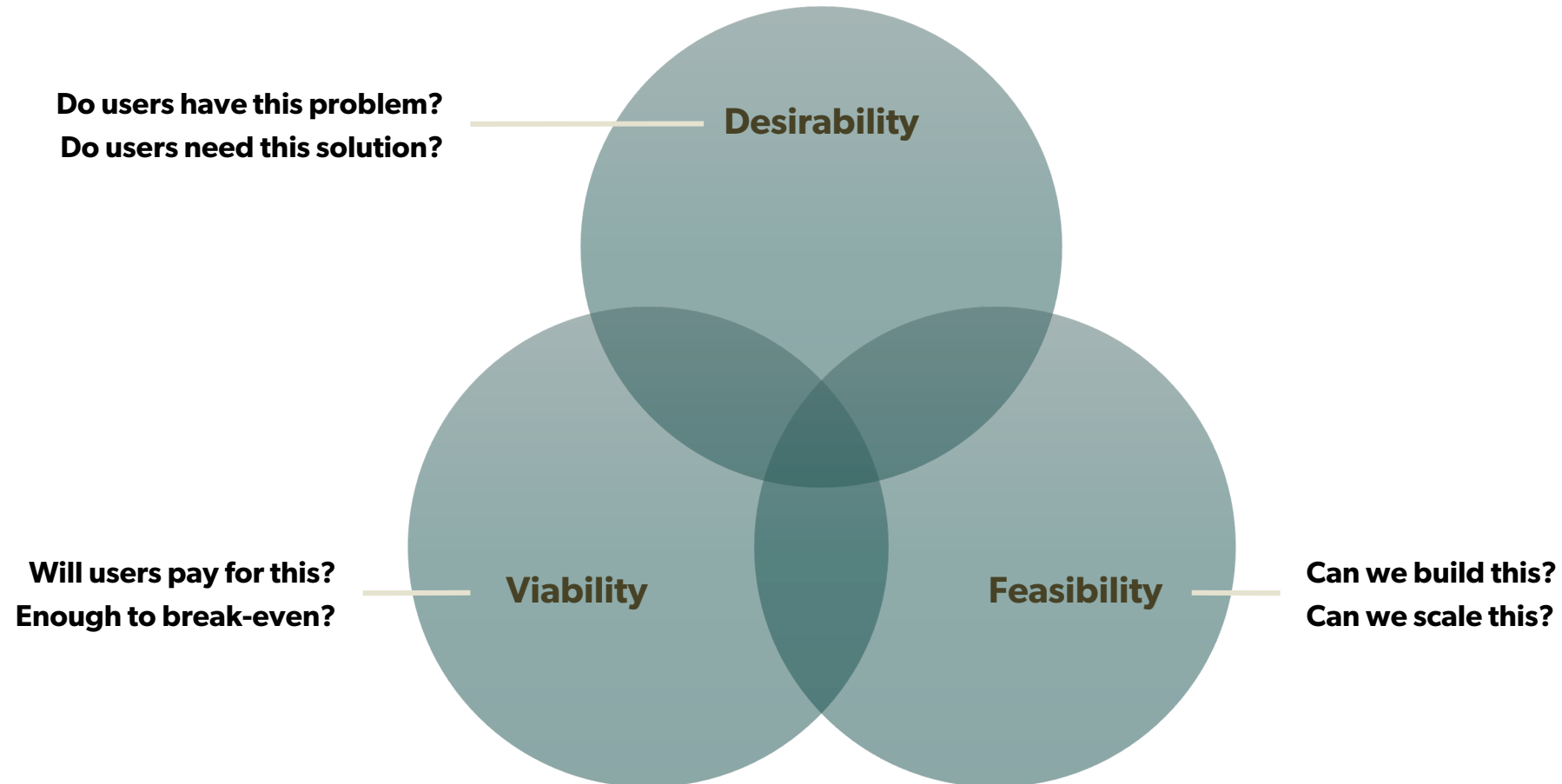
Artificial Super Intelligence (ASI)

Stage - 3
- Smarter than any human in any field
- Has a consciousness
- Does not exist yet

Discovery
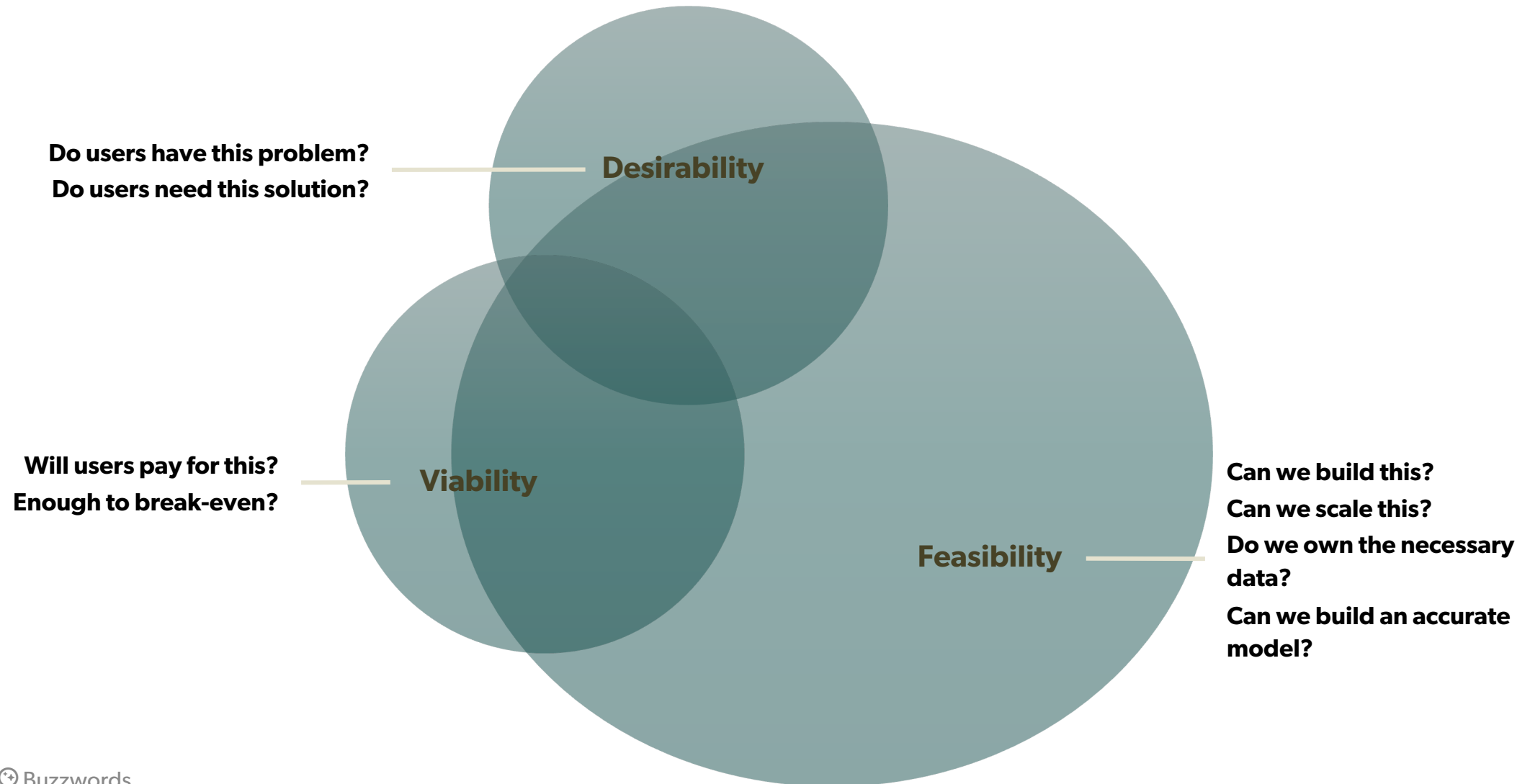
Step Two

Discovery Today

Do users have this problem?
Do users need this solution?

Desirability

Will users pay for this?
Enough to break-even?

Viability

Feasibility

Can we build this?
Can we scale this?

Discovery scaled wrong

Do users have this problem?
Do users need this solution?

Desirability

Will users pay for this?
Enough to break-even?

Viability

Feasibility

Can we build this?
Can we scale this?
Do we own the necessary data?
Can we build an accurate model?

Discovery scaled right

Do users have this problem?
Do users need this solution?

Desirability

Will users pay for this?
Enough to break-even?

Viability

Feasibility

Can we build this?
Can we scale this?

Datability

Do we own the necessary data?
Can we build an accurate model?

Discovery scaled right

Good from Great
Product Design Frontier

Own this dimension — Desirability

Cover this dimension — Viability

Feasibility — Understand this dimension

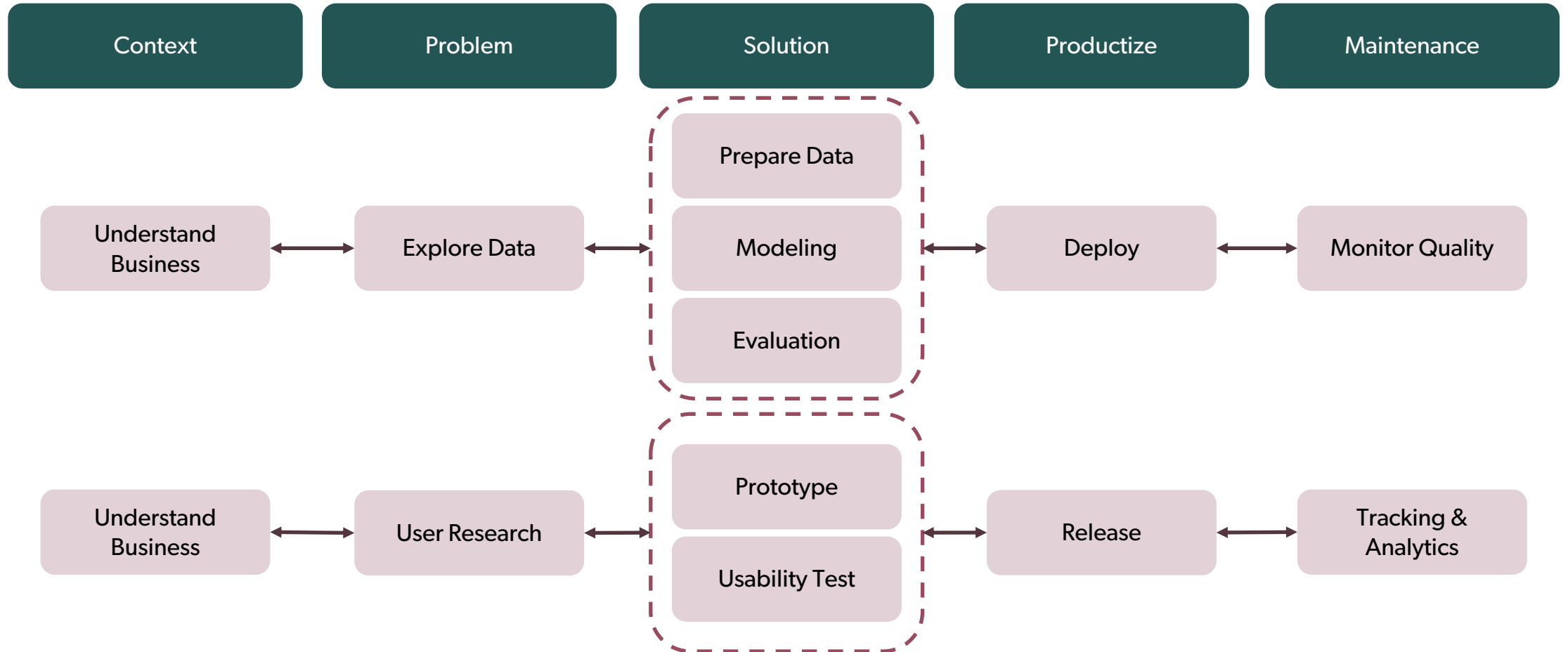Datability — Understand this dimension

We want the same things, let's join forces!

The goal is not to be right. But becoming less wrong.

Back and Forth. Repeat.

Context	Problem	Solution	Productize	Maintenance

Prepare Data

Modeling

Evaluation

Understand Business ↔ Explore Data ↔ Deploy ↔ Monitor Quality

Prototype

Usability Test

Understand Business ↔ User Research ↔ Release ↔ Tracking & Analytics

While we're at it, please understand these three!

Treat users ethically

Eliminate algorithmic bias. Eliminate dark patterns.

Multiple ways to introduce **unfairness**

Collection
Inherent bias in **how** training data is collected or user groups selected

Selection
Inherent bias in **what** training data is collected or user groups selected

Wrong Assumptions
Errors in assumptions about the data or user

Masking
Actively introducing bias and dark patterns optimizing wrongly

Multiple ways to introduce **fairness**

Pre-Processing
Removing bias from training data or user groups such that the classifier needs not to account for discrimination

In-Processing
Training a fair classifier on a possibly discriminatory dataset or cover up for unfair representations
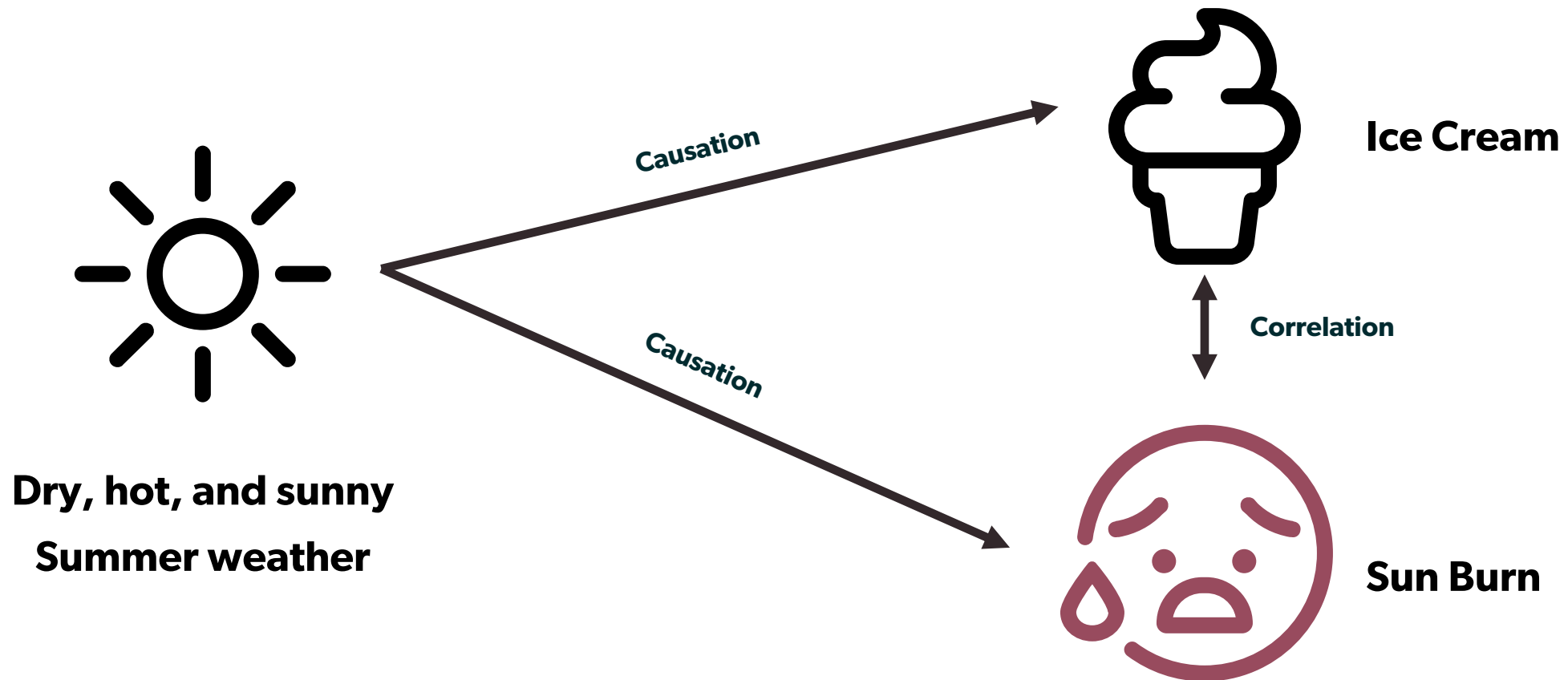
Post-Processing
Correcting bias of a classifier considering protected attributes used or actively eliminate unwanted patterns

Correlation vs Causality

Causation

Ice Cream

Correlation

Causation

Dry, hot, and sunny

Summer weather

Sun Burn

Chasing the P-Value

Significance is black or white. It does not depend.

Significant

You need a significance of α = 0.05
Your p-value <= 0.05
Significant.

No cherrypicking.
No p-hacking.
No significance chasing.

Not Significant

Possibly marginally significant
(0.116)
Not significant.

Flirting with the conventional levels of significance
(p > 0.1)
Not significant.

Narrowly escape significance
(0.08)
Not significant.

Kickstart

Step Three

The Honeypot Product Duo

Design
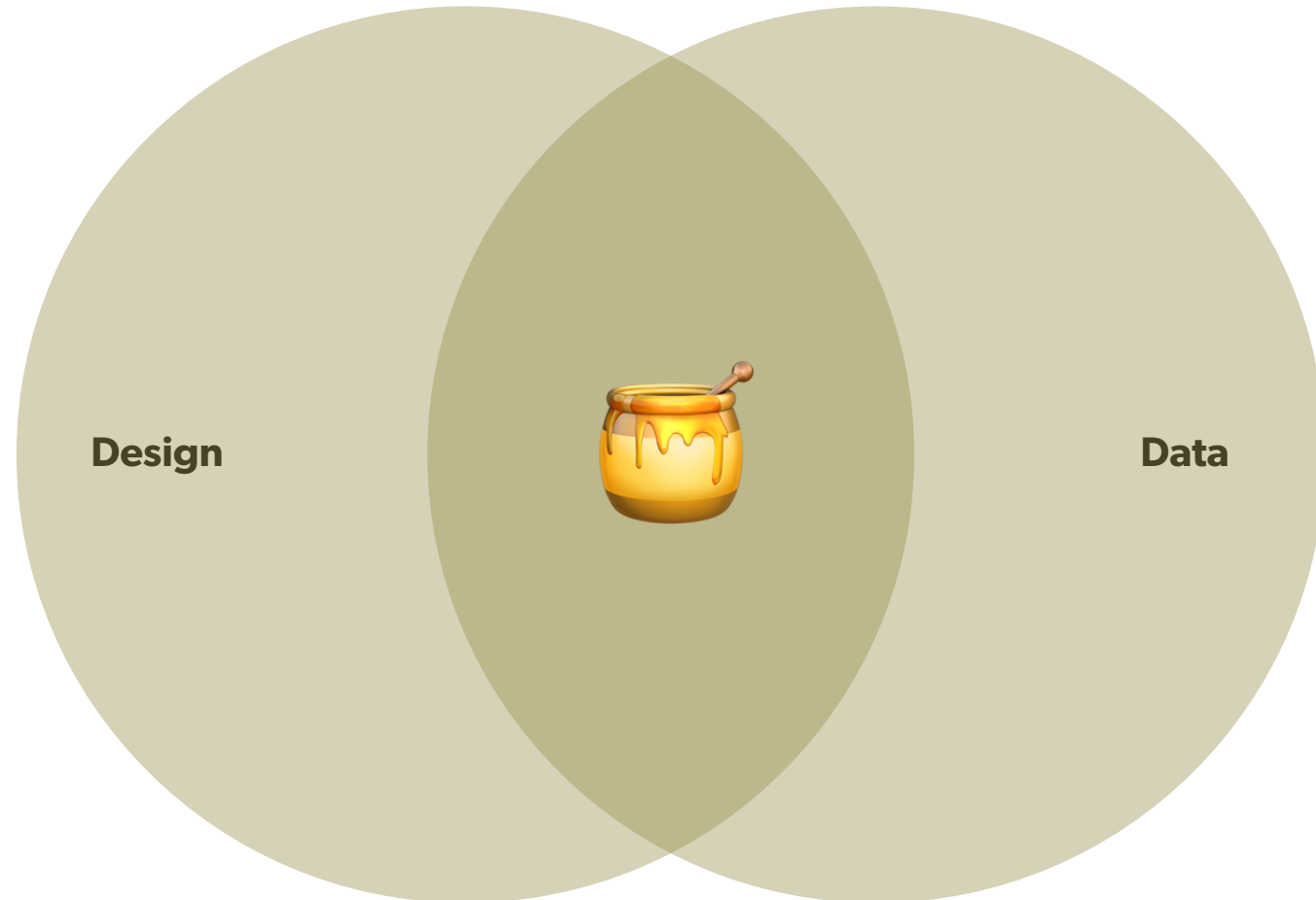
Data

Data (Science) Sophistication

We all started on the left. WAGMI.

Business Intelligence	Data Science	

Value

Descriptive Analytics

Questions answered
- What happened?
- Why did it happen?

Statistical methods related to
- traditional research
- business intelligence
- advanced analytics

Predictive Analytics

Questions answered
- What will happen based on what happened?
- When will it happen?

Andvanced methods from:
- advanced statistics
- machine learning
- automation

Prescriptive Analytics

Questions answered
- How to decide?
- What to do?

Andvanced methods from:
- advanced statistics
- machine learning
- automation

Past   **Present**   **Future**   **Complexity**

Get these right

Nail the Problem
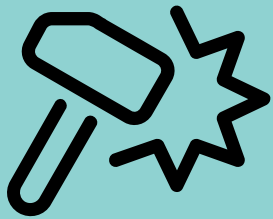
- Formulate precisely
- Describe exactly
- Slice appropriately

Experiment Setup

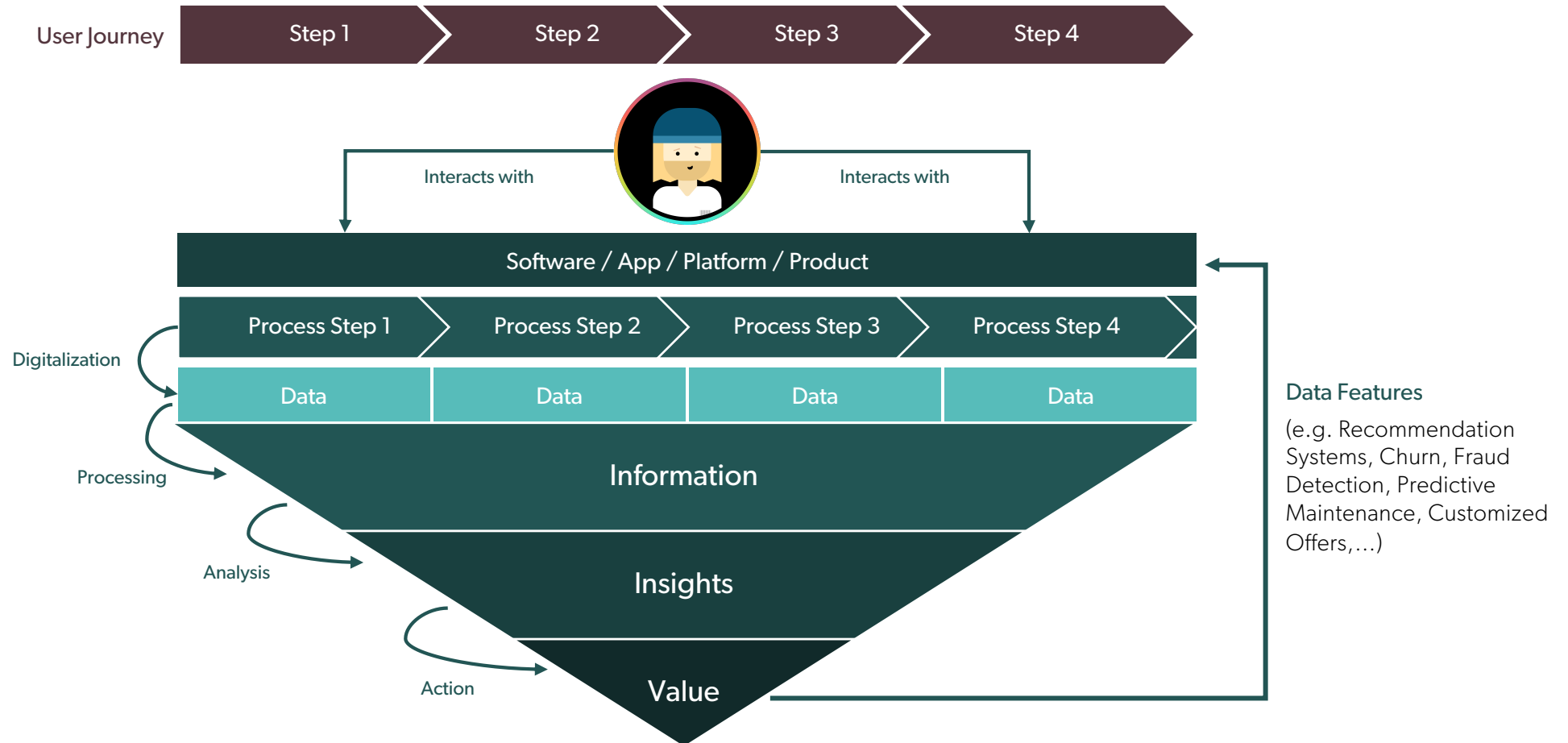- Assumptions
- Hypothesis
- Method

Facilitate

- Across Functions
- Along Process
- Into Business

Just because it is technically possible does not mean an experience needs it.

We're doing it for the user

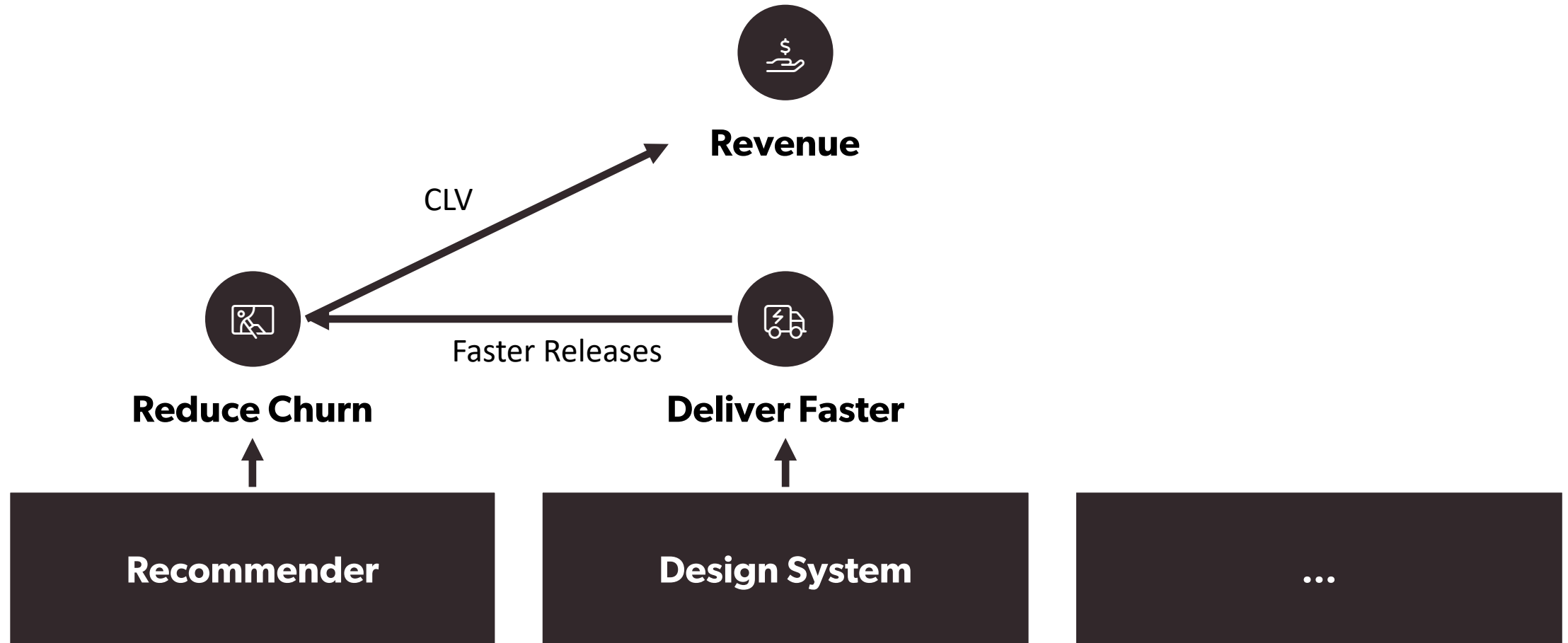Go ahead and enrich the experience with data features. When in doubt suggest, don't imply.

Really cool but was it worth the invest?

Every Manager. Always.

Don't neglect Business Value

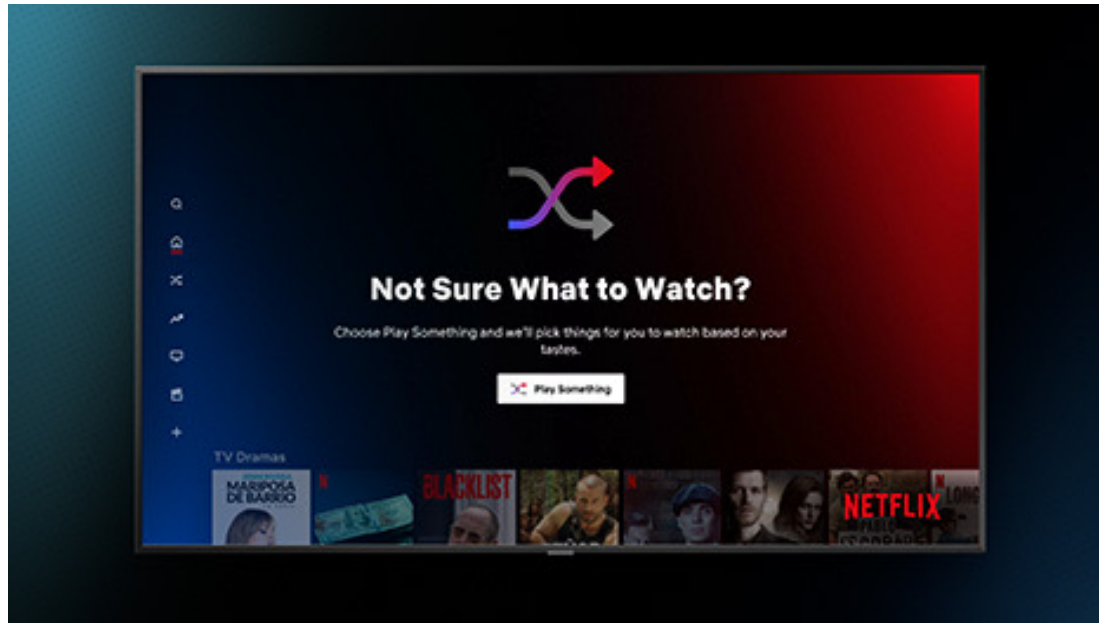Support the existing model first. Disruption will follow.

Is there a **Design** Future without **Data**?

Yes. Sort of. It depends.

Actually, no.

🎬 Netflix – A Honeypot Product

I don't want to search a movie database. I want to watch something I will love.
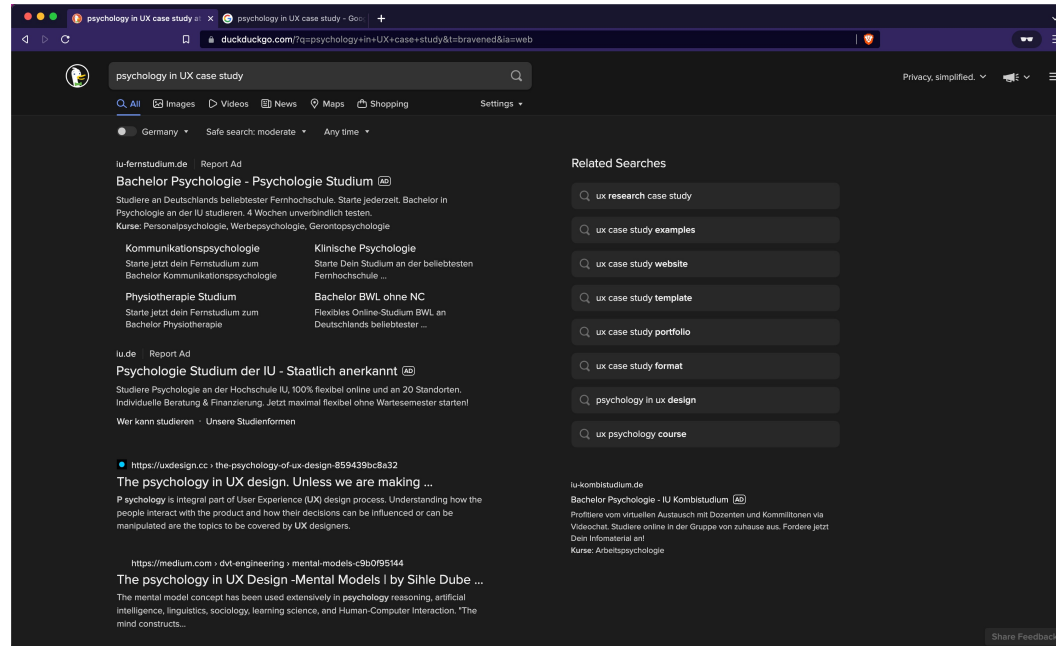

Recommendation to the Max

- Generate 80% of content views through ML recommender
- View data to determine what to produce next
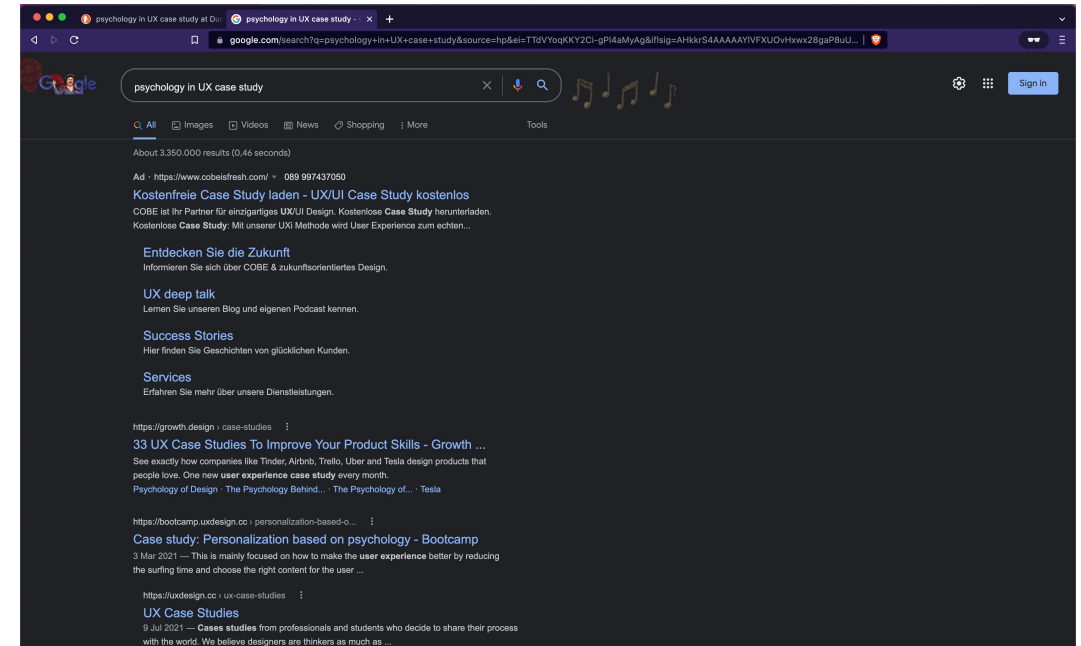- Fully automated landingpage A-/B-Tests

G Google - A Honeypot Product

Browser: Brave. Mode: Private. Search Term: Exactly the same. Case: Forgot the exact name.

DuckDuckGo
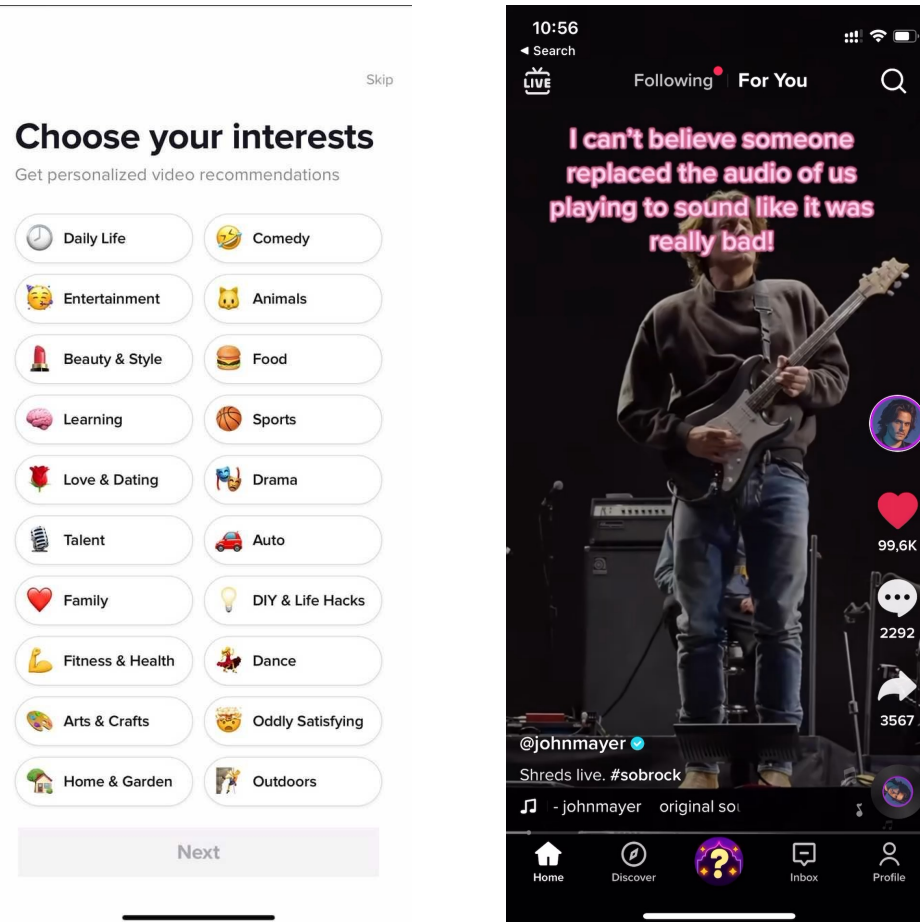✅ Privacy
❌ Search Success (mid of page two)

Google
❓ Privacy (complicated to say the least)
✅ Search Success (first result after ad)

TikTok - A Honeypot Product

Beware, it's an addictive slot machine with short videos

What they do

Personalization right from the start

- Category preference
- Location

Learn from Behaviour

- Engagement
- Interaction

Surprise

- You don't know what's next
- Reward with new video for little effort (a flick)

If nothing else, what to take away?

Add Data to your Design Toolbox

Understand the concept, design the hype.

Beyond Buzzwords

Speak the language, understand the concepts

Will help you in each conversation

Change Discovery

Facilitate and understand all involved parties

Always better together

Kickstart Product

Start easy, enhance experience, contribute to business goals

Don't forget your users

Master Data.
Buckle up for Web 3.

Maximilian Schmidt

✉ hello@schmidtmaximilian.de

◐❚ @maximilianschmidt

🐦 @malongar_smith (be my first follower)

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