Decision science in business

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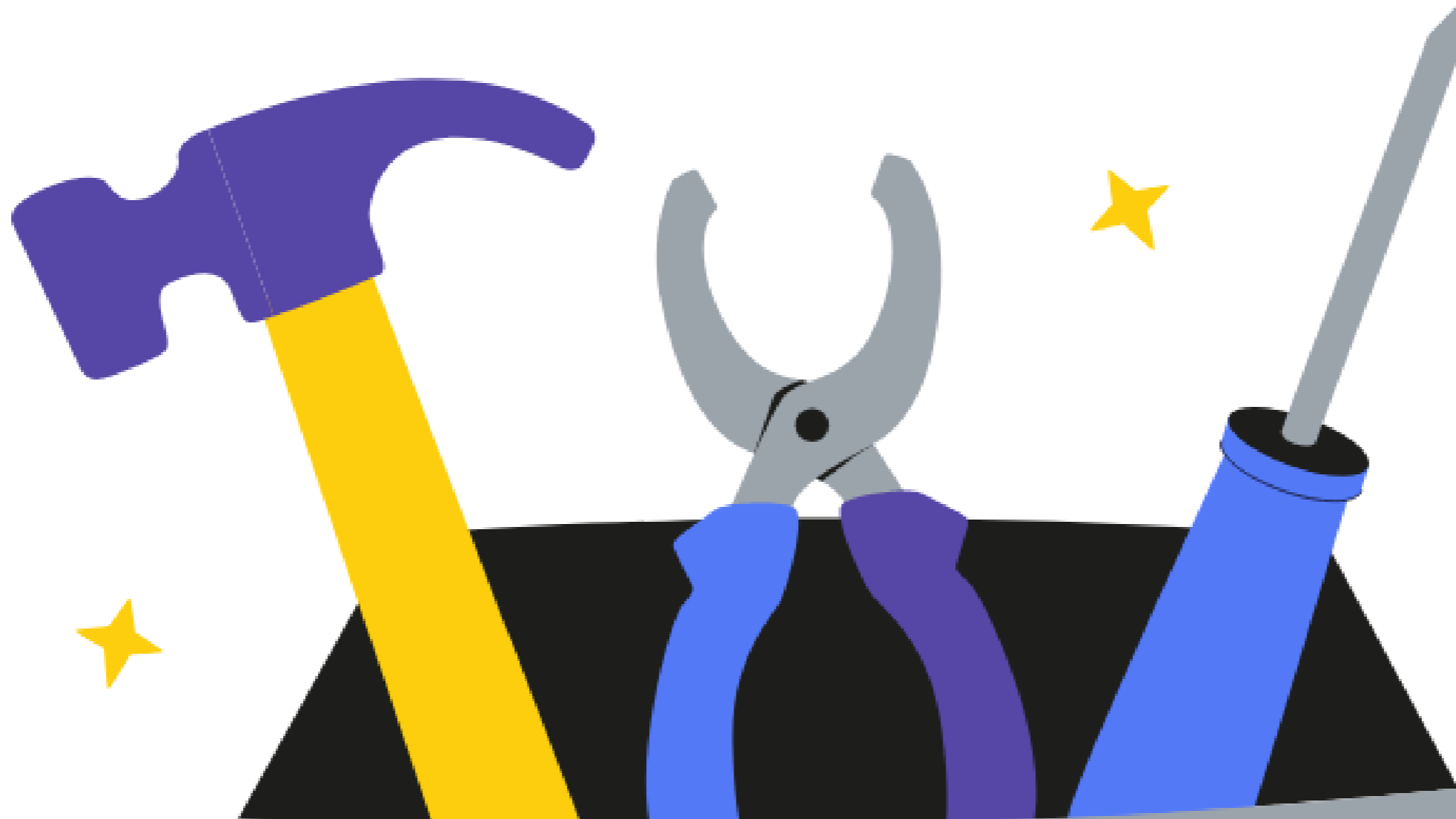
Howard Friedman

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Tools of the trade

- A toolkit for making informed, data-driven decisions

- Bridges the gap between data and insights, driving measurable results

Decision science in marketing

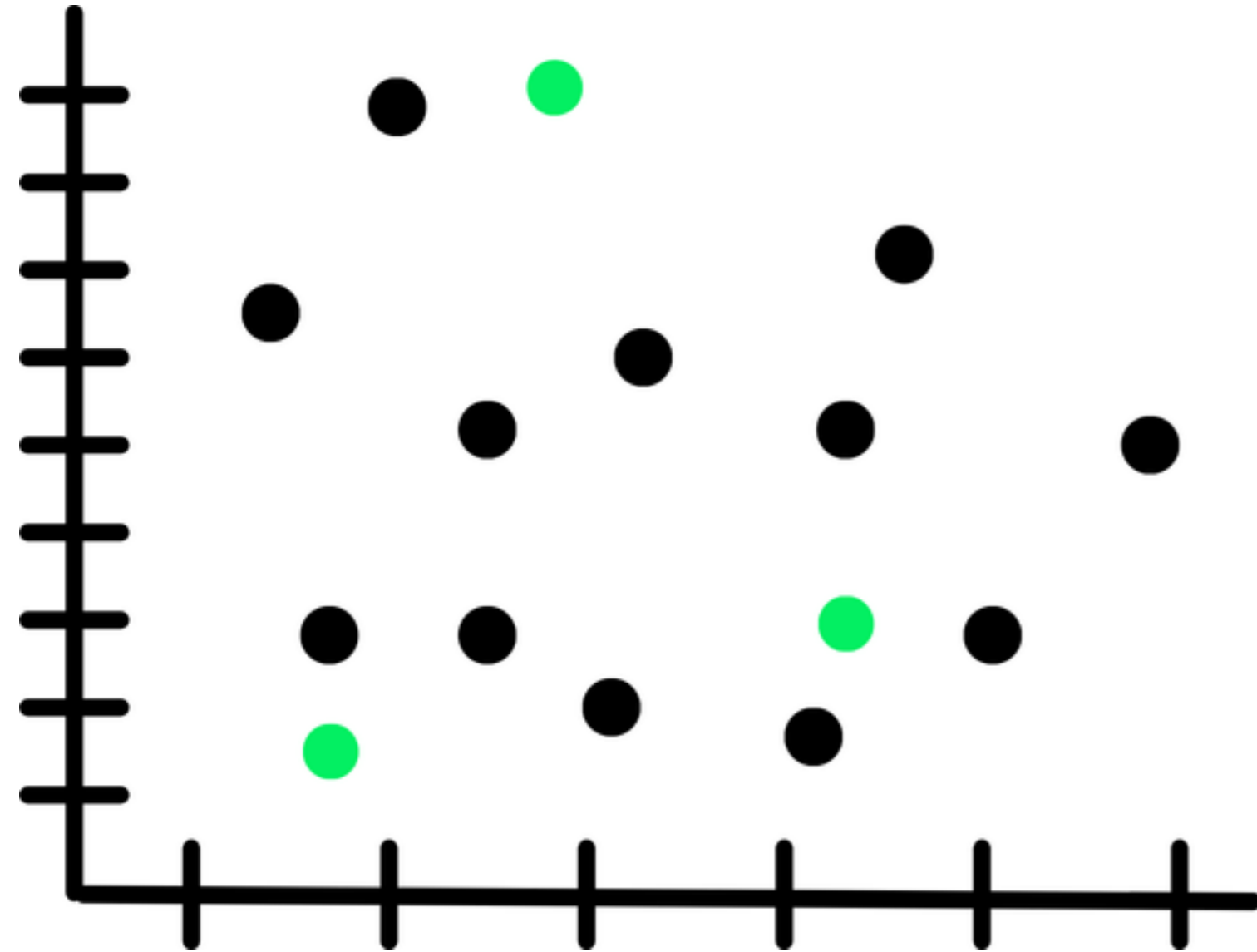**Understand your audience with data**

- Use clustering algorithms to group customers by preferences

- Segment by demographics or purchasing behavior

Boost campaign effectiveness

- Personalize messaging for each segment

- Increase engagement and drive higher conversions
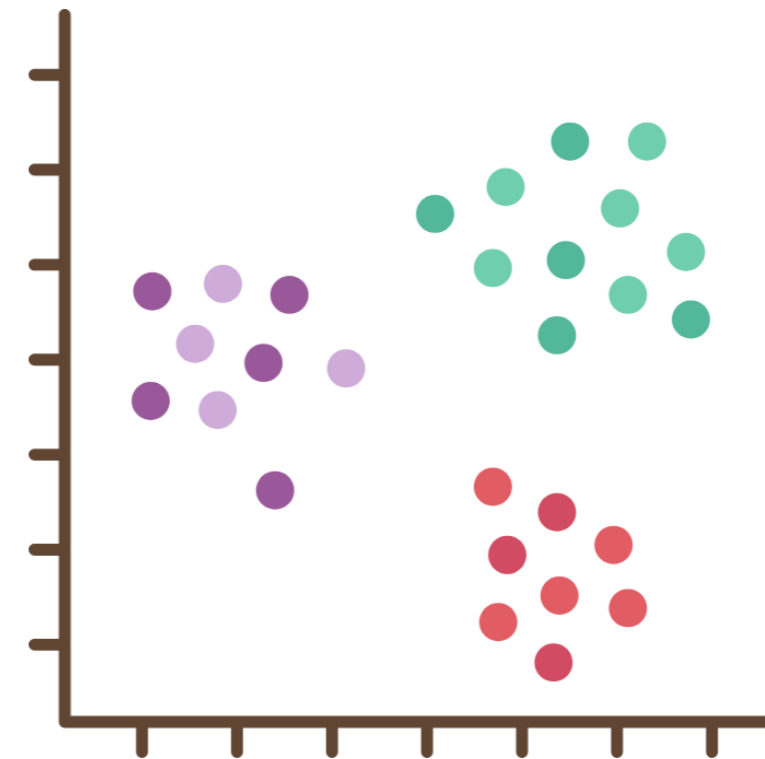
Decision science in finance

Manage risk with predictive models

- Predict credit risk and assess market volatility

- Detect fraud and unusual patterns in real time

Support sound financial decisions

- Allocate resources wisely

- Reduce exposure to potential losses

Supply chain

Optimize operations across the supply chain

- Analyze demand patterns, inventory levels, and transportation costs

- Inform decisions on scheduling, replenishment, and distribution

Drive efficiency and customer satisfaction

- Streamline logistics and reduce costs

- Improve delivery performance and customer experience

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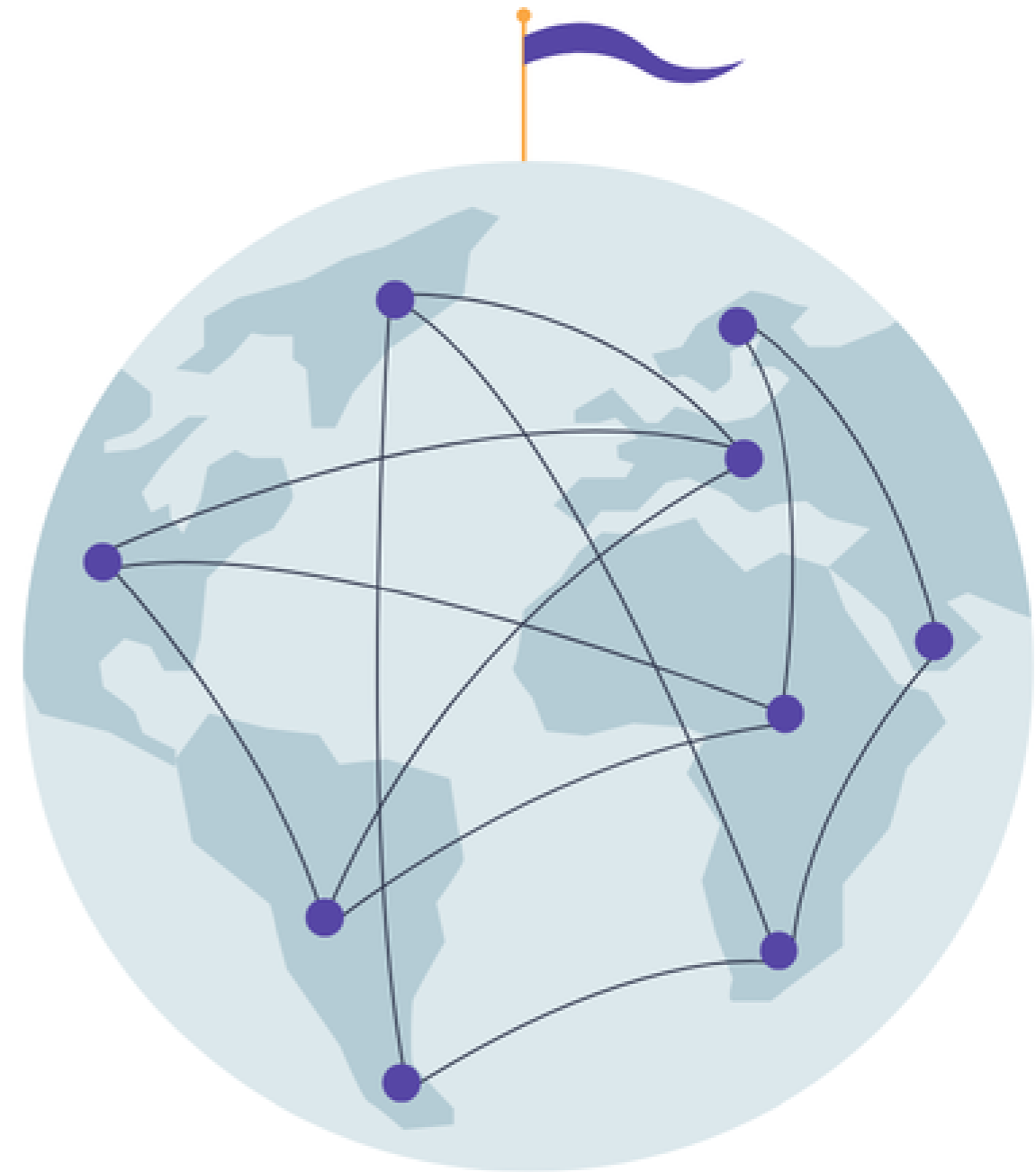
Project scoping is your roadmap, outlining goals, requirements, and challenges
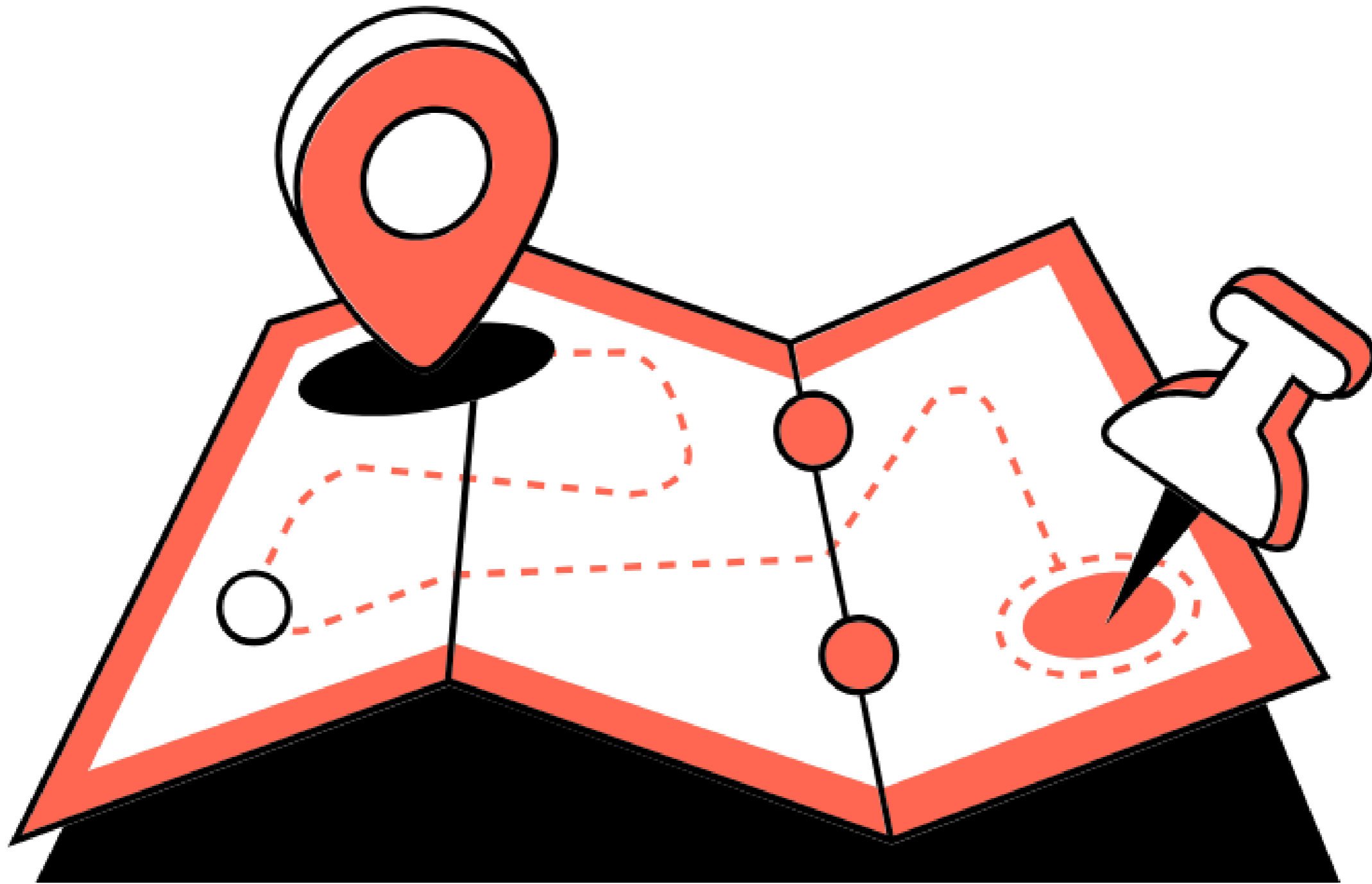
Six steps

1. Define the business problem you're trying to solve

2. Identify key stakeholders

3. Assess available data sources and their quality

4. Establish success metrics to track performance

5. Allocate resources including budget, personnel, and tools

6. Set a realistic timeline with clear milestones
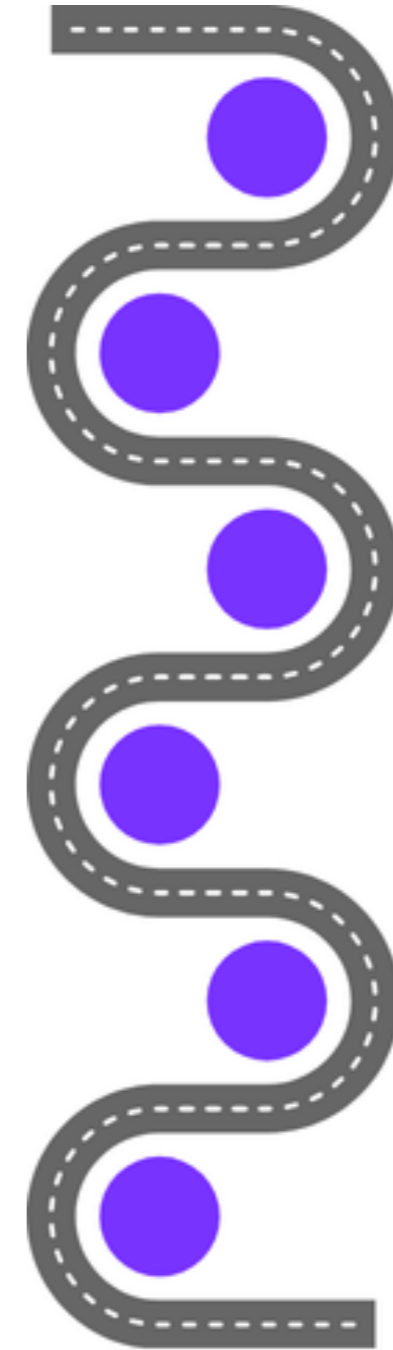
- Decision science helps you make informed, data-driven choices that create real impact

- It's about asking the right questions and guiding decisions with data, strategy, and a clear project scope

Let's practice!

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Data detectives

- Decision scientists uncover patterns and solve problems using data

- But insights only have impact when shared clearly and inspire action

Data storytelling is about transforming raw data into a narrative that captivates and informs

- Highlights key trends, outliers, or relationships

- Connect the dots to form a clear and meaningful message

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Frame insights as stories

Data discovery: satisfaction scores below 3.5 significantly increase customer churn

> "Our analysis shows a critical tipping point - customers are far more likely to leave when satisfaction scores fall below a certain level. Improving customer experience at this stage could be the key to reducing churn and protecting revenue."

Framing insights as a story helps: **connect with your audience, highlight urgency,** and **make the insight compelling and actionable.**

Don't complicate, clarify

- Use line charts to show trends over time
- Use bar charts to compare values across categories
- Use scatter plots to explore relationships or correlations
- Keep visuals simple, uncluttered, and labelled

Tailor your message to your audience

Focus on the "so what?"

- Highlight the implications of your findings
- Show how your insight addresses business needs or priorities

Know your audience

- Executives want high-level takeaways and strategic impact
- Technical teams may want methodology, data detail, and model performance

Adapt how you present

- Use different levels of detail, visuals, and storytelling based on who you're speaking to
- Align your message with what matters most to each group

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Let's practice!

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Building a data-driven culture

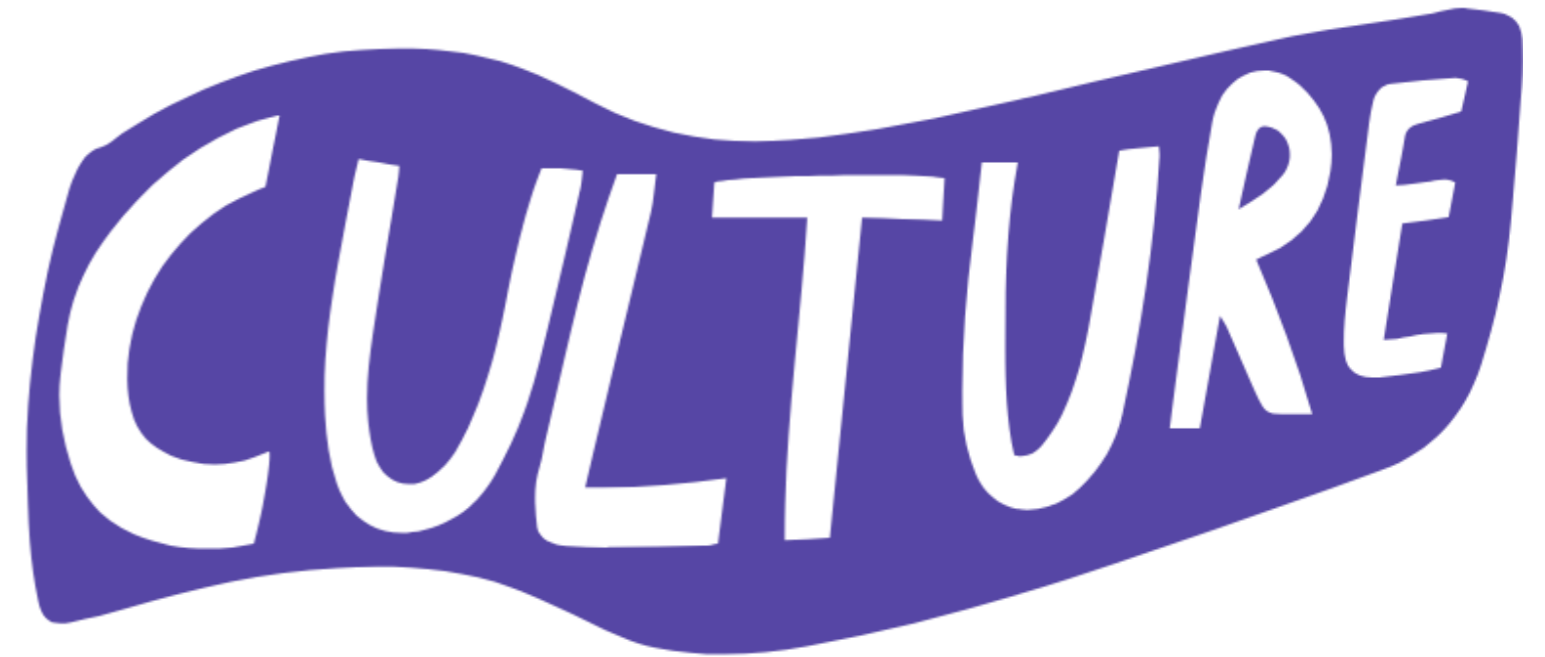## DEMYSTIFYING DECISION SCIENCE

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Unmet potential

Having data isn't enough - you need the right **culture**

- Many projects get stuck, go unused, or lose stakeholder trust

- Recognizing these early helps you avoid them

- Common pitfalls fall into two groups: **data-related** and **business-related**

# Data-related

- Lack of usable or accessible data

- Insufficient infrastructure or tooling

- Not enough skilled personnel

- Poor quality control processes

Business-related

- No executive buy-in or sponsorship

- Weak project management or unclear ownership

- Insufficient communication

- Inadequate investment

- Poor collaboration between teams

- No established decision science culture

Five key steps
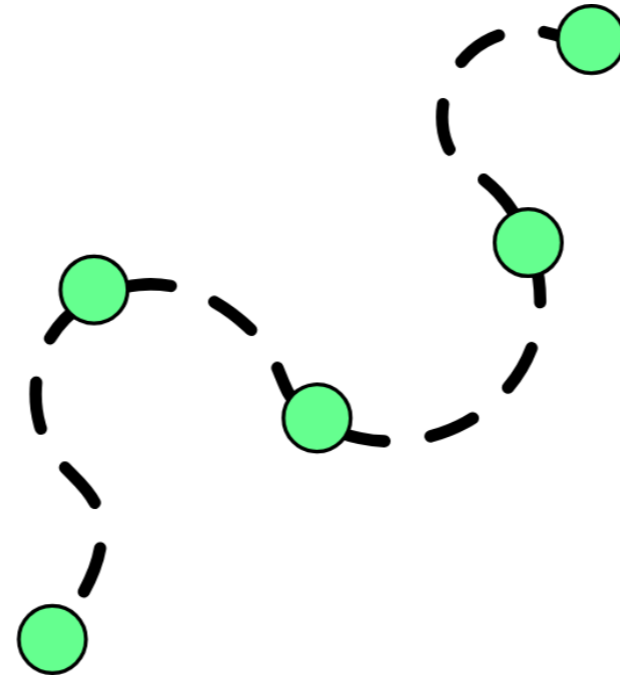
1. Learn the basic vocabulary

2. Identify meaningful business problems

3. Ask good questions

4. Challenge assumptions

5. Embrace a test-and-learn mindset

One, two, three

Step 1: Master the language

- Understand key concepts like risk, bias, and experimental design

- Vocabulary builds shared understanding between business and technical teams

Step 3: Ask powerful questions

- Explore the goals, data, models, and assumptions

- Push beyond the surface to uncover what truly matters

Step 2: Prioritize the right problems

- Start with the business challenge, not the tool

- Focus on problems that are both critical and solvable

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Four and five

Step 4: Challenge assumptions

- Question the status quo and uncover hidden biases

- Use data to test assumptions, spark innovation, and improve decisions

Step 5: Embrace a test-and-learn mindset

- Not every experiment will succeed - and that's okay

- Focus on iteration, learning, and long-term growth

More than models: It's about empowering everyone to make better choices

Practice makes perfect!

Let's practice!

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The future of decision science

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Akshay Swaminathan

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Looking ahead

Transformation is underway

- Advances in science and technology are reshaping how decisions are made

- Understanding emerging trends is key to staying ahead

Four forces shaping what comes next

- AI in decision-making

- Big data analytics

- Human-in-the-loop decision-making

- Integration of behavioral economics

AI in decision science

Unlocking scale and precision

- AI automates tasks and delivers insights

- Drives predictions in health, retail, and marketing

- Supports personalization, risk scoring, and optimization

Balancing power with transparency

- Black-box models can limit trust

- Interpretable AI explains key factors behind decisions

Smarter partnerships

Interpretability builds trust

- AI systems can now explain predictions, improving transparency

- This makes collaboration between humans and AI more effective

Human-in-the-loop decision-making

- AI flags insights, humans add context and ethical judgment

- Example: Radiologists use AI to identify scan abnormalities, but make the final call

Collaboration leads to better outcomes

Incorporating behavioral economics

Humans aren't always rational

- Behavioral economics reveals how bias and emotion shape decisions

- Example: Loss aversion can influence pricing or investment behavior

- Understanding biases helps improve design, communication, and policy

Big data

Big data powers real-time decision-making

- Data from sensors, social media, and transactions is growing rapidly

- Example: IoT sensors monitor perishable goods, enabling real-time supply chain decisions

- Combining big data with AI improves speed, accuracy, and agility

The future is integrated

- The convergence of AI, big data, human-in-the-loop systems, and behavioral insights is shaping what's next

- Embracing these trends empowers us to drive innovation and impact

Let's practice!

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Wrap up

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Chapter One:

- Explored decision modeling, problem framing, and ethics in data-driven work

Chapter Two:

- Defined success, assess data sources, perform quality checks, select features, and scoped models

- Learned how to support a decision science culture

Chapter Three:

- Practiced communicating with stakeholders and aligning on insights

- Closed with an exploration of future trends in decision science

Thank you

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Stay in touch

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