

# Establishing an AI culture

UNDERSTANDING ARTIFICIAL INTELLIGENCE



Iván Palomares Carrascosa

Senior Data Science & AI Manager

# The value of AI in organizations

AI value in  
organizations

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Competitive  
advantage

AI value in  
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Less operational costs

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Revenue and efficiency

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Less operational costs

Competitive advantage

Revenue and efficiency

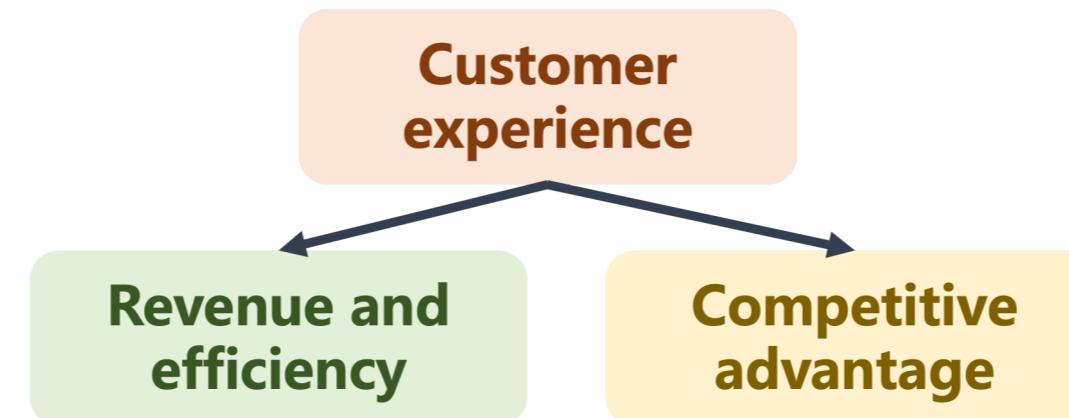
Customer experience

AI value in organizations

# The value of AI in organizations



AI for personalization example: identifying customers' shopping habits leads to more loyalty and increased sales.



# Building an AI-driven organization

Roadmap

1. **Roadmap:** obtain leadership support and a clear vision for AI adoption

# Building an AI-driven organization

Roadmap

Data strategy  
and governance

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2. **Data strategy:** plan to collect, use, and govern data for AI

# Building an AI-driven organization

Roadmap

Data strategy  
and governance

Infrastructure  
resources

- 1. Roadmap:** obtain leadership support and a clear vision for AI adoption
- 2. Data strategy:** plan to collect, use, and govern data for AI
- 3. Infrastructure resources:** scalable computing infrastructure and AI tools

# Building an AI-driven organization



- 1. Roadmap:** obtain leadership support and a clear vision for AI adoption
- 2. Data strategy:** plan to collect, use, and govern data for AI
- 3. Infrastructure resources:** scalable computing infrastructure and AI tools
- 4. Roles:** talented AI, Machine Learning, and Data Science roles

# Building an AI-driven organization



## 5. Collaboration: cross-functional AI projects

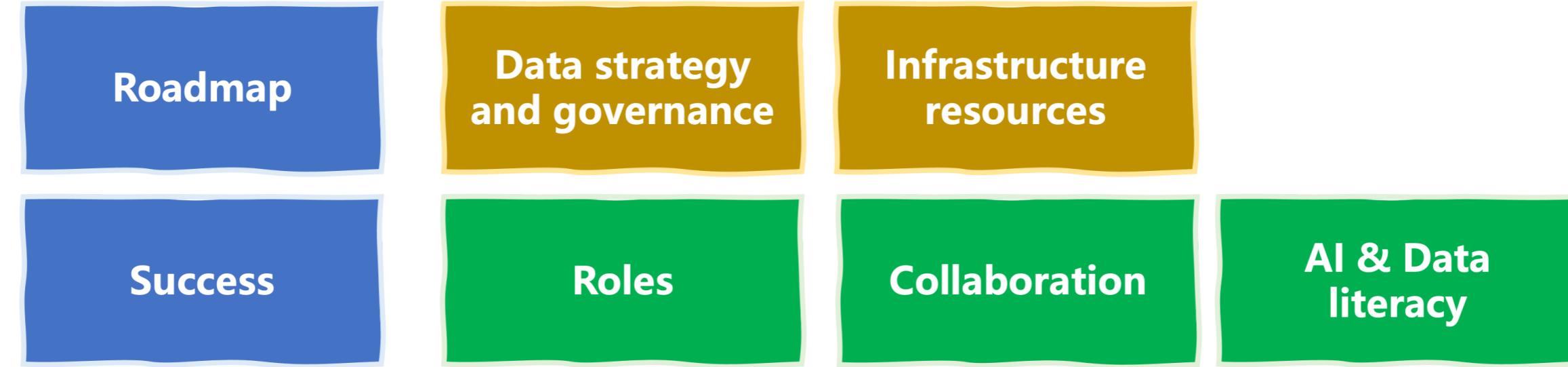
# Building an AI-driven organization



5. **Collaboration:** cross-functional AI projects

6. **Success:** define and pursue success aims, e.g. *customer-centric*, impact on *revenue*, etc.

# Building an AI-driven organization

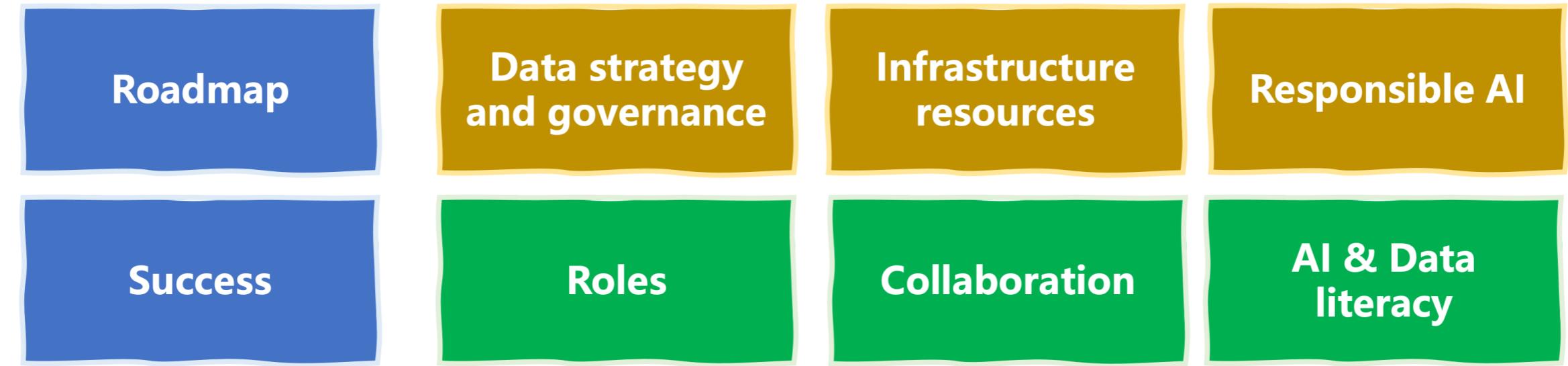


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6. **Success:** define and pursue success metrics, e.g. *customer-centric*, impact on *revenue*, etc.

7. **AI & Data literacy:** continuous AI and data evangelization for everyone

# Building an AI-driven organization



5. **Collaboration:** cross-functional AI projects

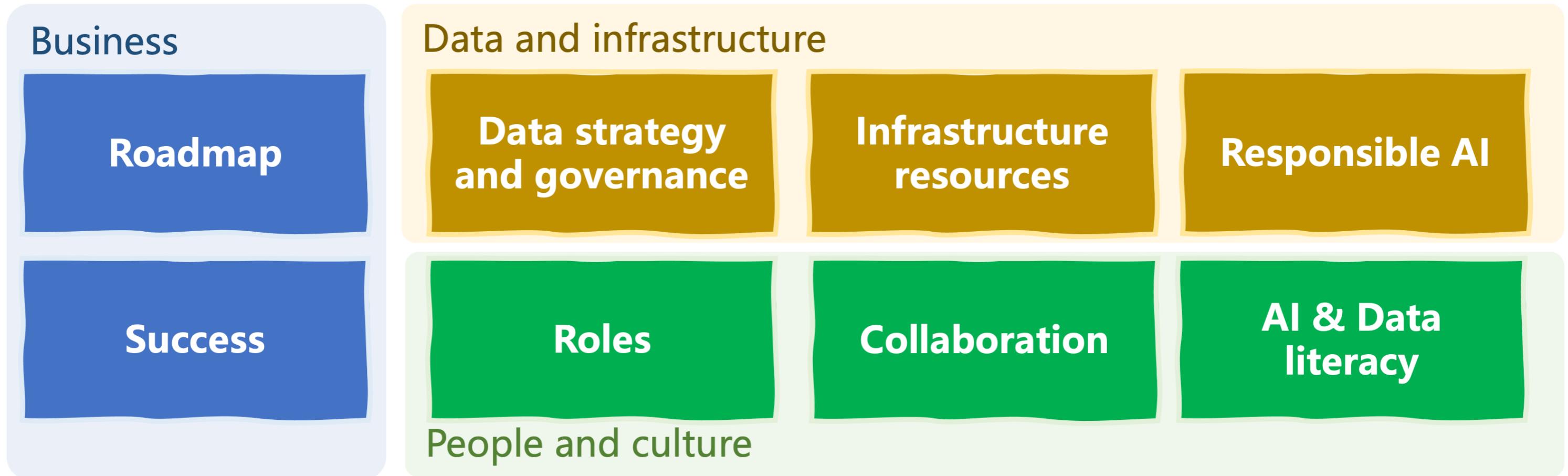
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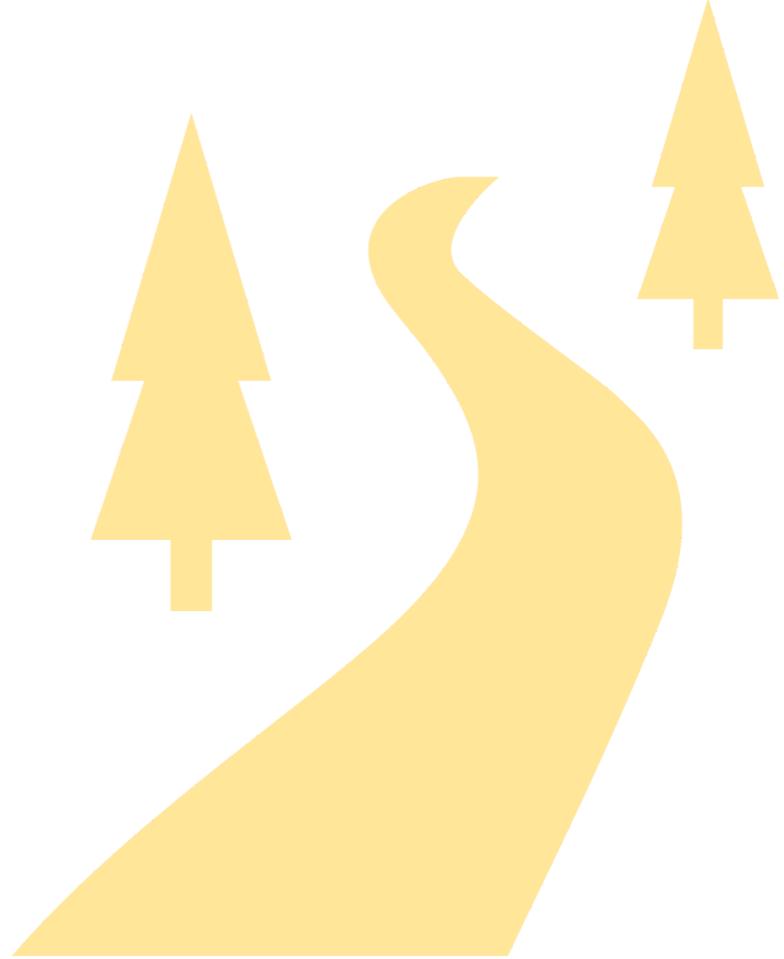
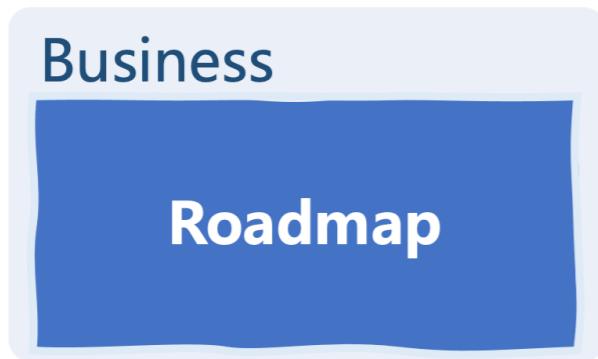
8. **Responsible AI:** ethical, secure, and accountable use of AI and data

# Building an AI-driven organization

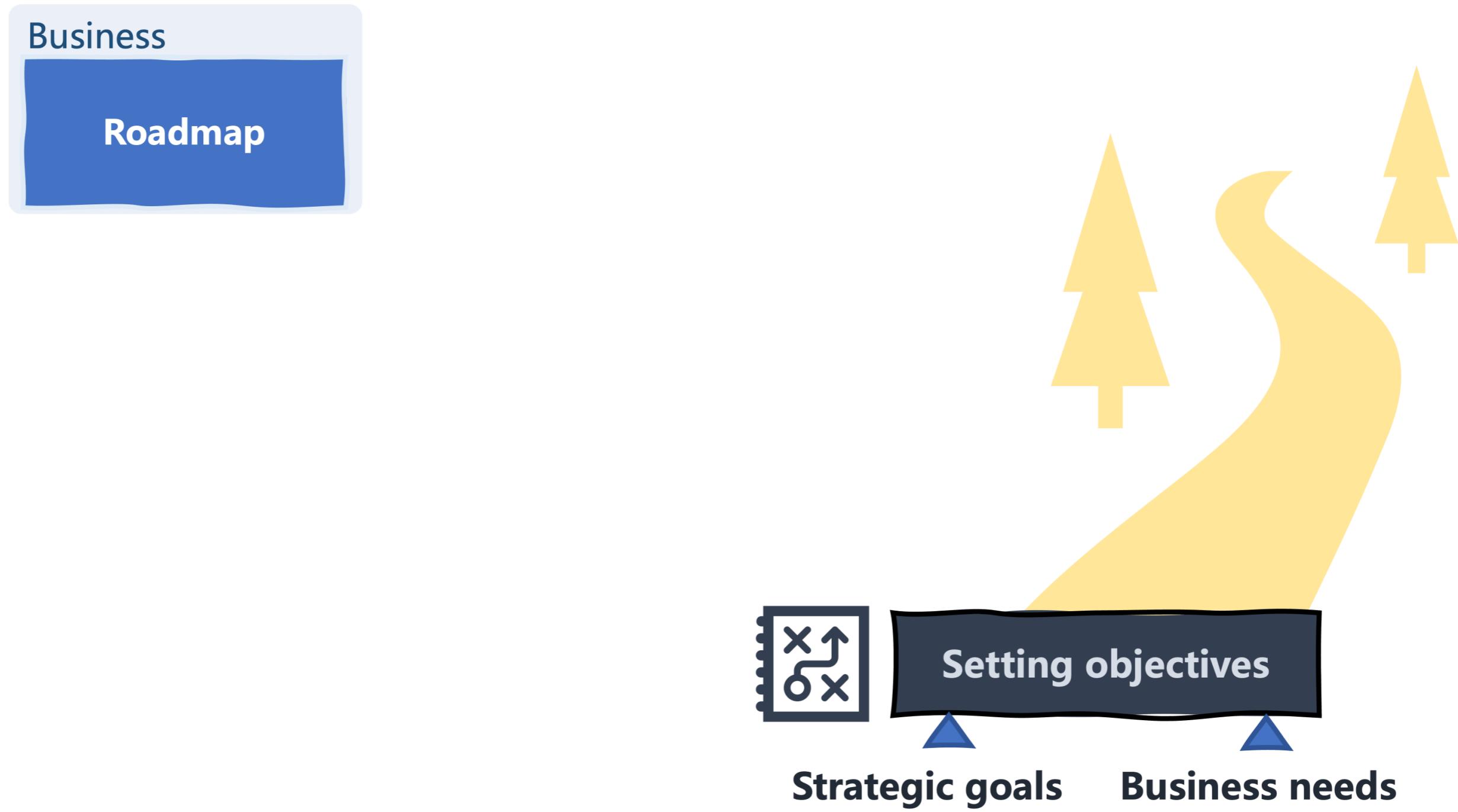
8 elements, 3 dimensions



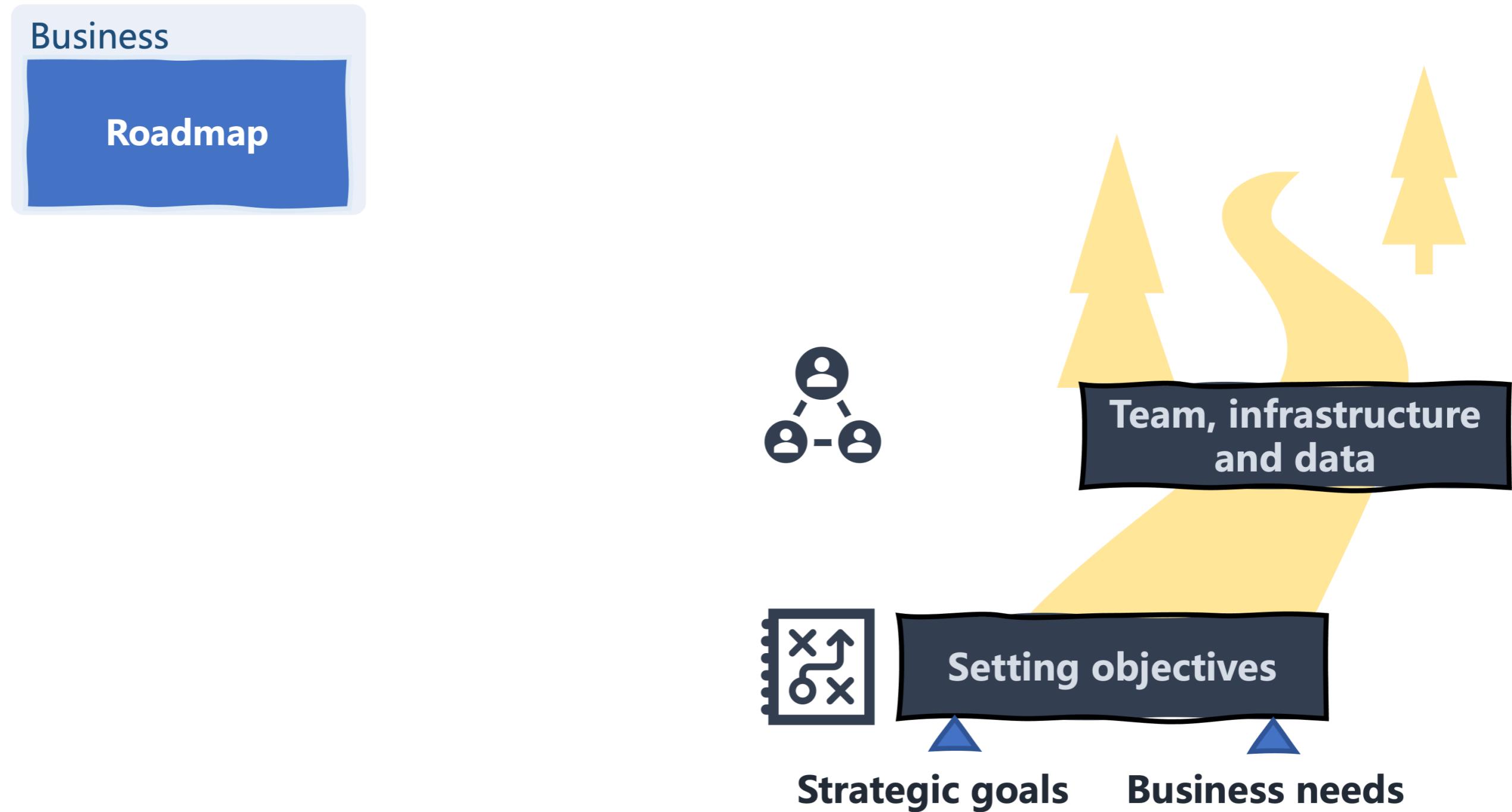
# AI-driven organization: roadmap



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# AI-driven organization: roadmap



## Example: insurance company AI roadmap

- Objective:** efficient claim processing
- Resources:** data scientists; ML experts; cloud infrastructure; customer, policy and claim data
- Implementation:** ML model for automated fraud detection and claim classification, extendable to customer service

# **Let's practice!**

**UNDERSTANDING ARTIFICIAL INTELLIGENCE**

# Data strategy, resources, and people

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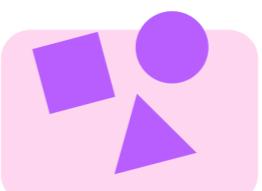
Senior Data Science & AI Manager

# Data strategy and governance

**Data strategy:** design and development of data-centric approaches for information extraction and business decision-making

**Data strategy steps:**

1. Setting data-oriented objectives
2. Find out necessary data
3. Determine data sources and types
4. Predictive and prescriptive analysis
5. Operationalize data-driven processes



# Resources: AI infrastructure

## Cloud-based AI infrastructure

Scalable computing resources, data storage, AI & ML development tools and pre-built models. Elastic, on-demand



**Pros:** High scalability, Cost-effectiveness

**Cons:** Data location, Internet needed

## On premises (self-hosted) AI infrastructure

Organizations own their hardware software, data, and network resources to support AI operations



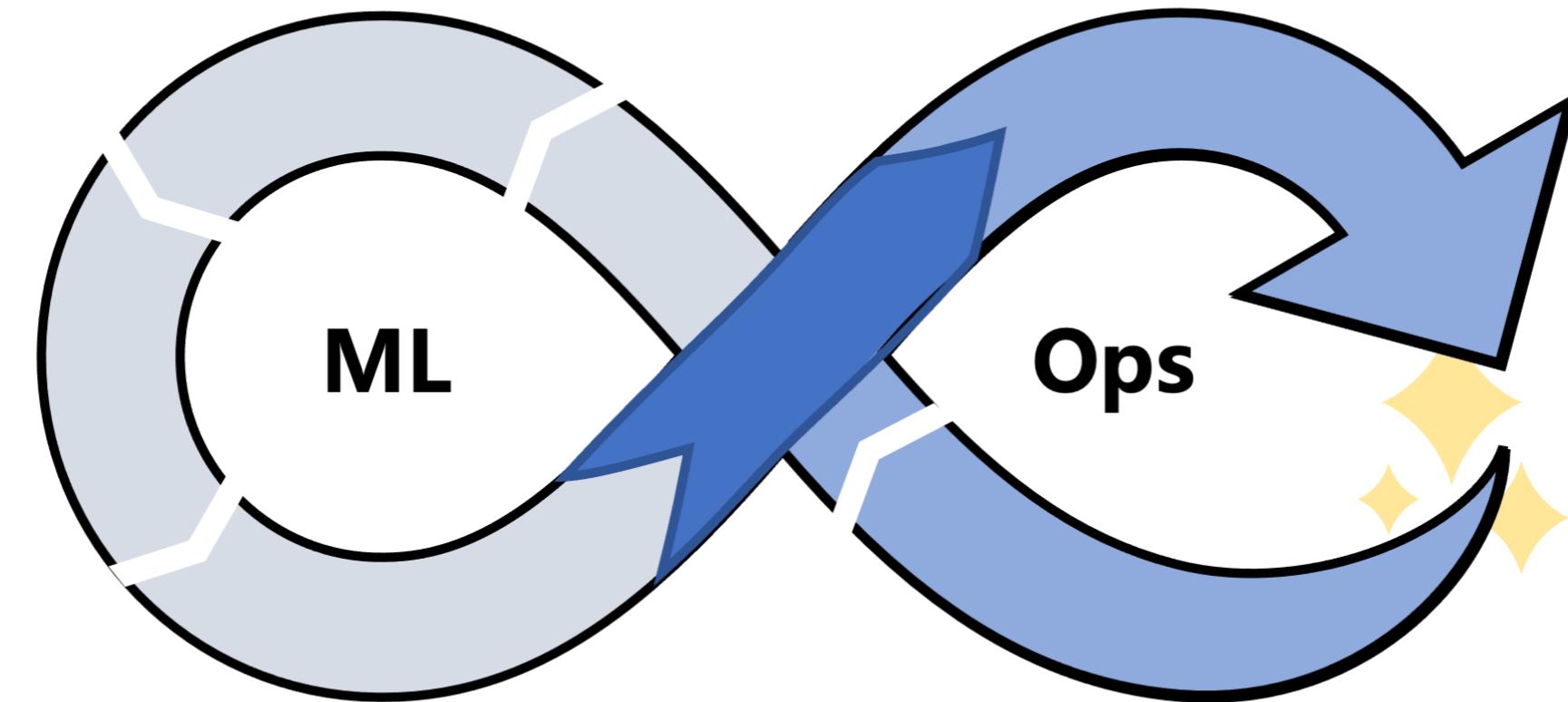
**Pros:** Enhanced data control, lower latency

**Cons:** Upfront costs, limited scalability

<sup>1</sup> Left image: Google Cloud Platform, Microsoft Azure, and Amazon Web Services logos

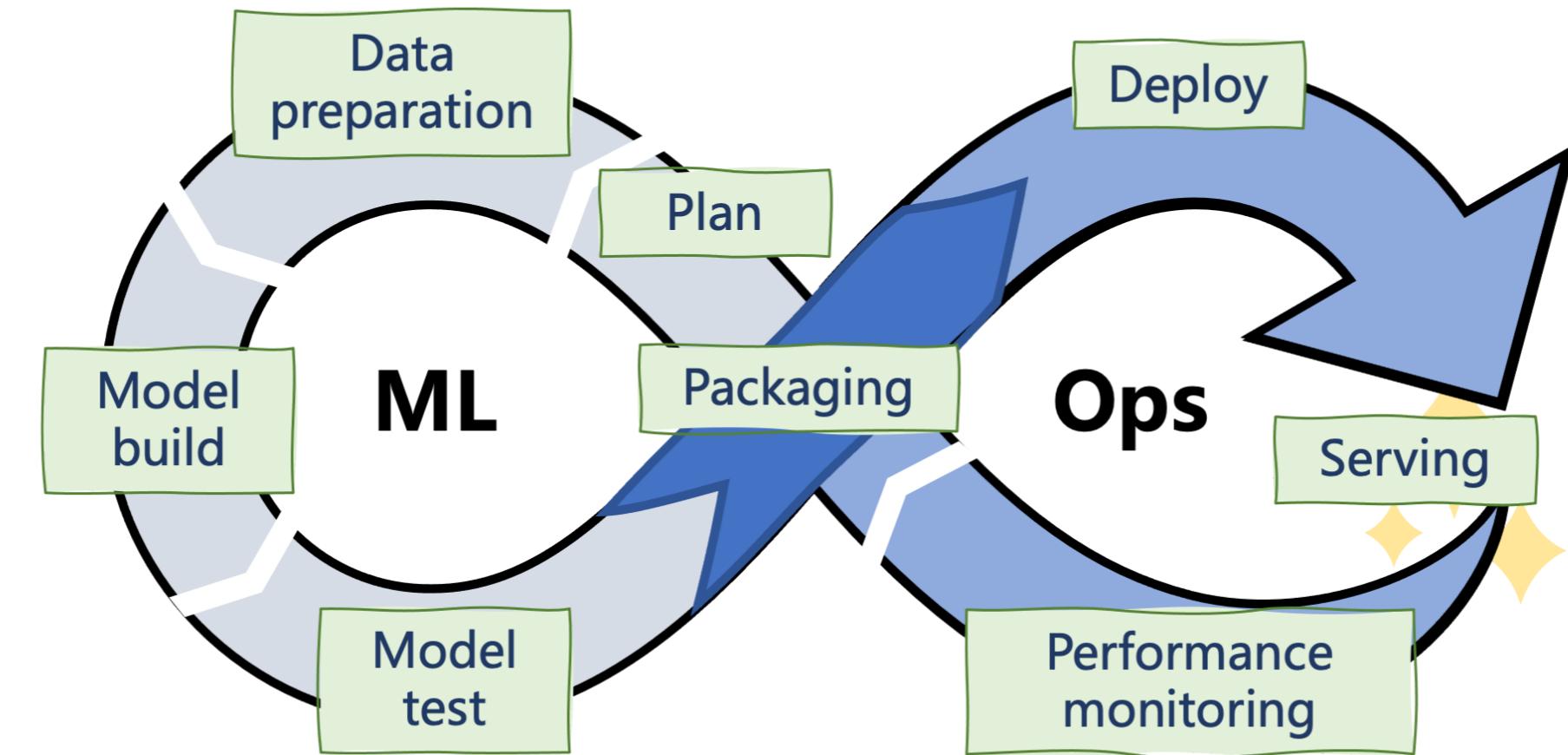
# Resources: MLOps methodology

Machine Learning Operations (MLOps): efficient and reliable management and operation of ML (AI) systems in the enterprise



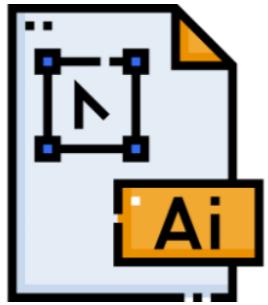
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# People: AI-related roles

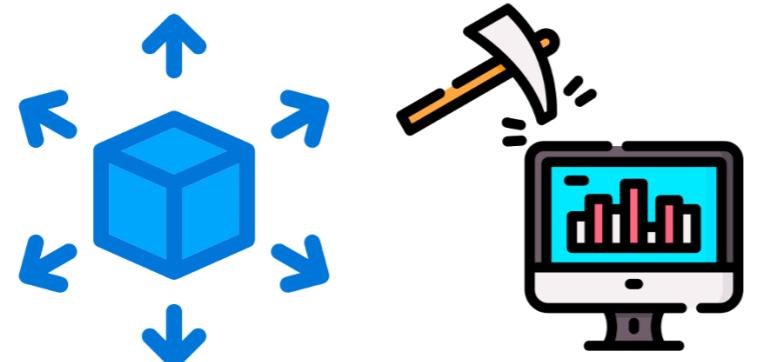
AI Architect



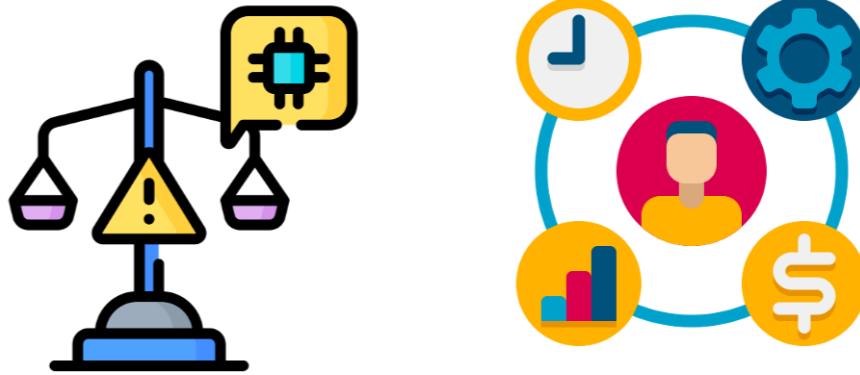
Data Scientist



Machine Learning and Data Engineer



Others: AI Ethicist, Project Manager



<sup>1</sup> Icon made by Freepik, juicy\_fish, deemakdaksina from www.flaticon.com

# Building your AI team

## Leadership and management

- AI manager / team lead
- AI project manager(s)

## Execution & MLOps

- AI architects
- Data scientists
- ML & data engineers

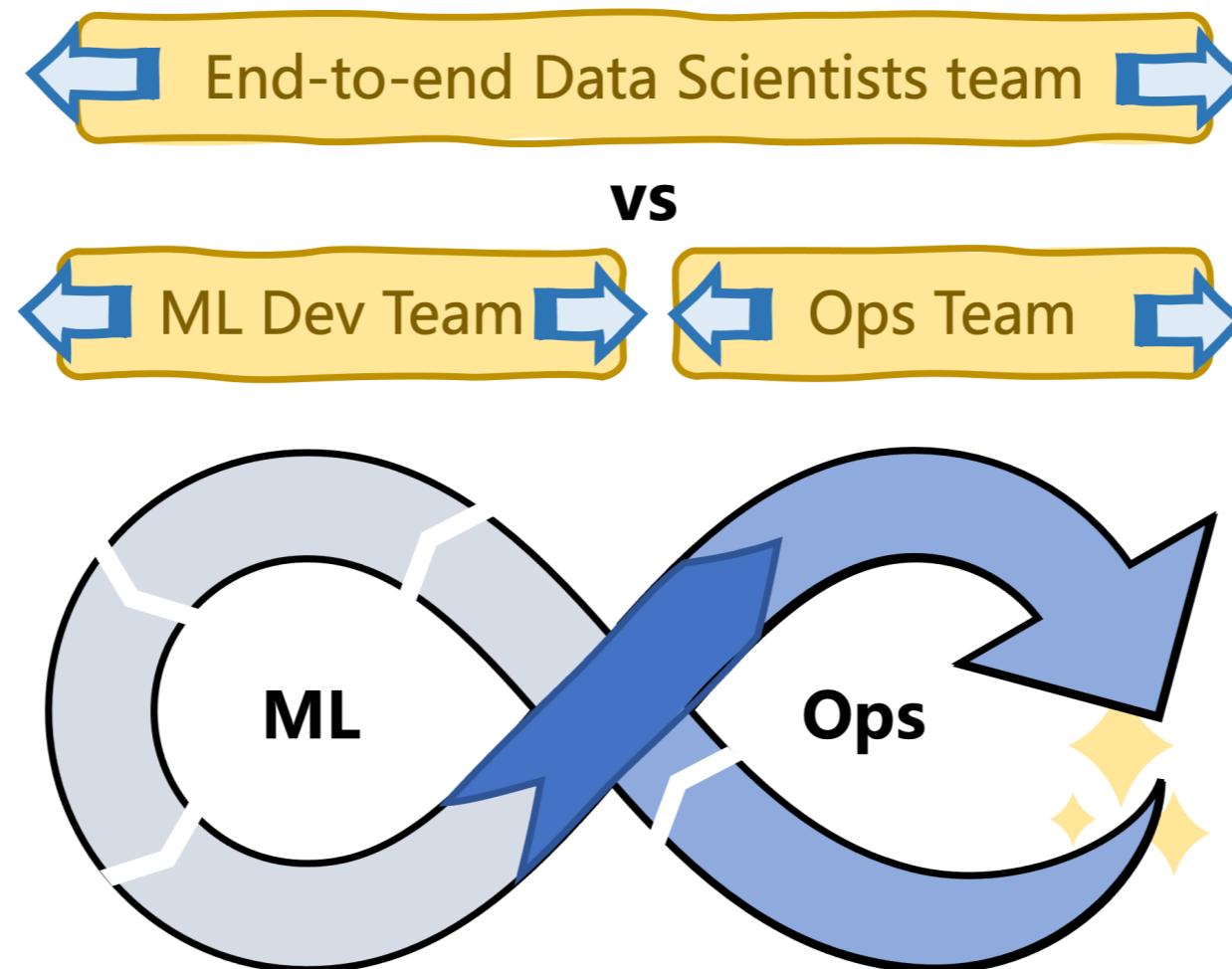
## Support



# Building your AI team

**End-to-end data scientists:** responsible for whole MLOps lifecycle, over-ambitious skills

**Dedicated teams:** Dev + Ops teams, strong communication and collaboration needed



# Building your AI team

## Leadership and management

- AI manager / team lead
- AI project manager(s)

## Execution & MLOps

- Data scientists
- AI architects
- ML & data engineers

## Support

- AI ethicist; domain experts.



# **Let's practice!**

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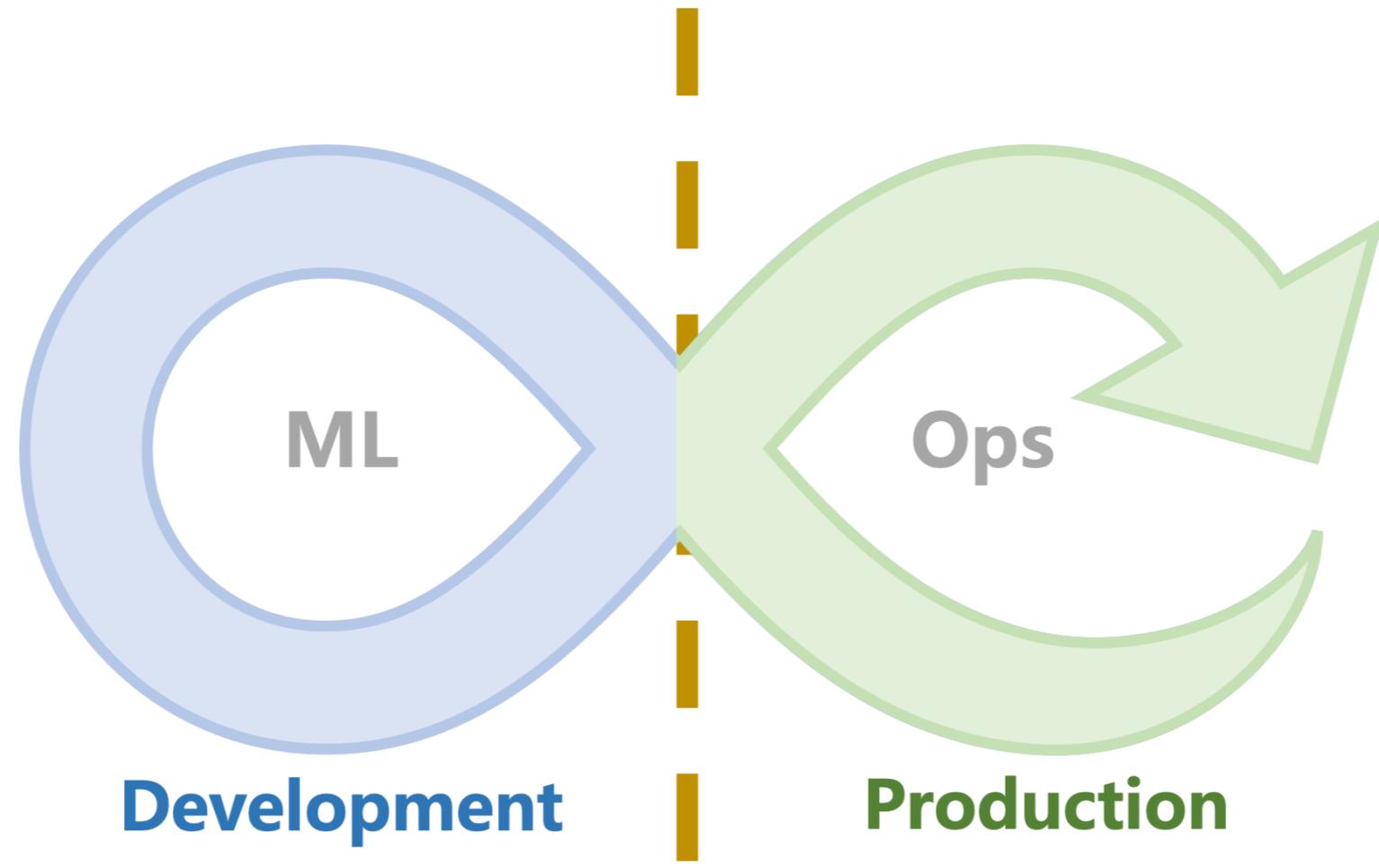
# Is your deployed AI system successful?

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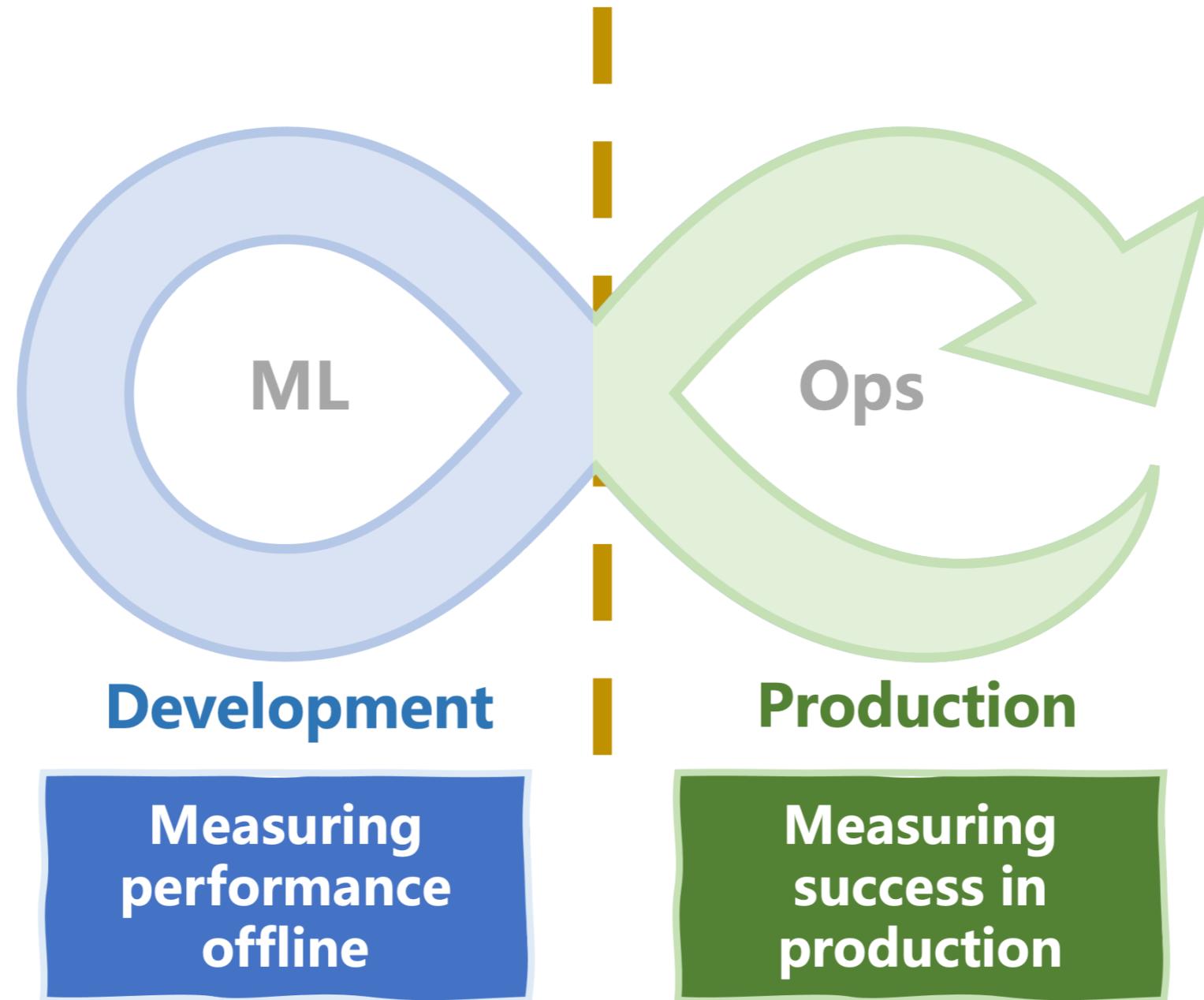


Iván Palomares Carrascosa  
AI course instructor, DataCamp

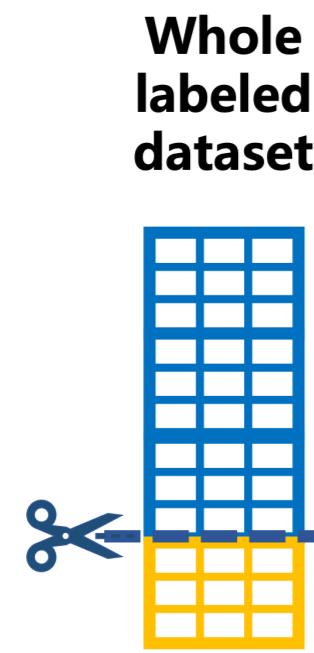
# When to measure success?



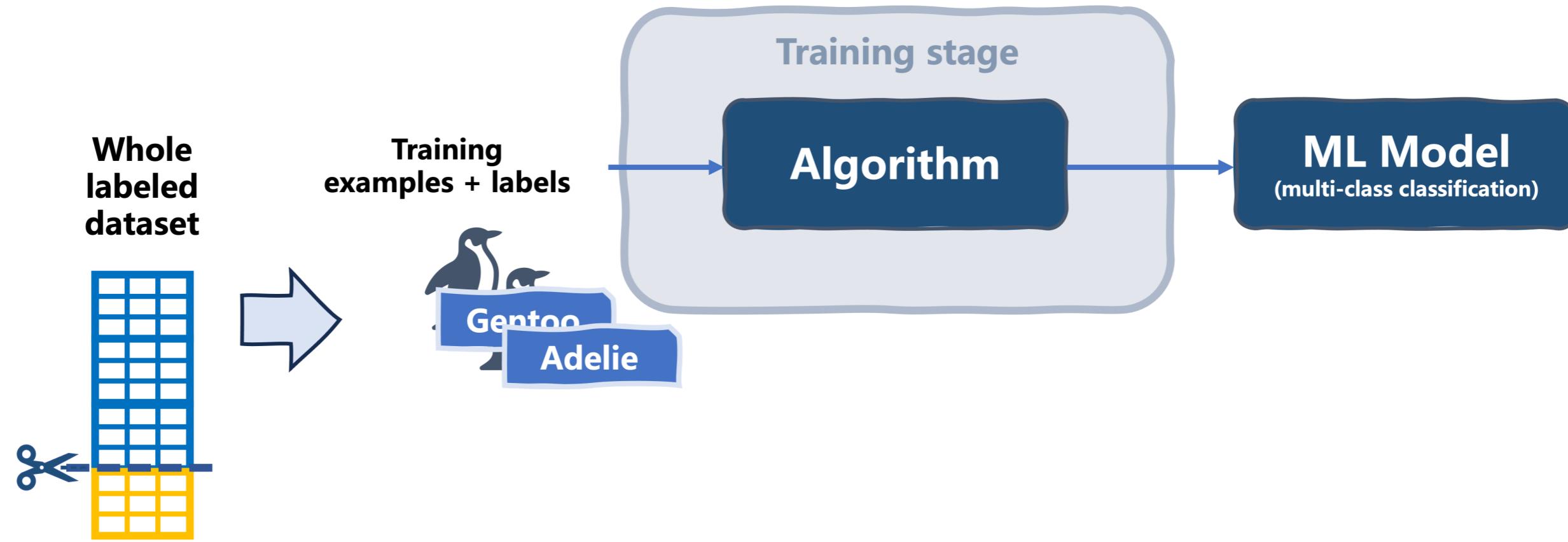
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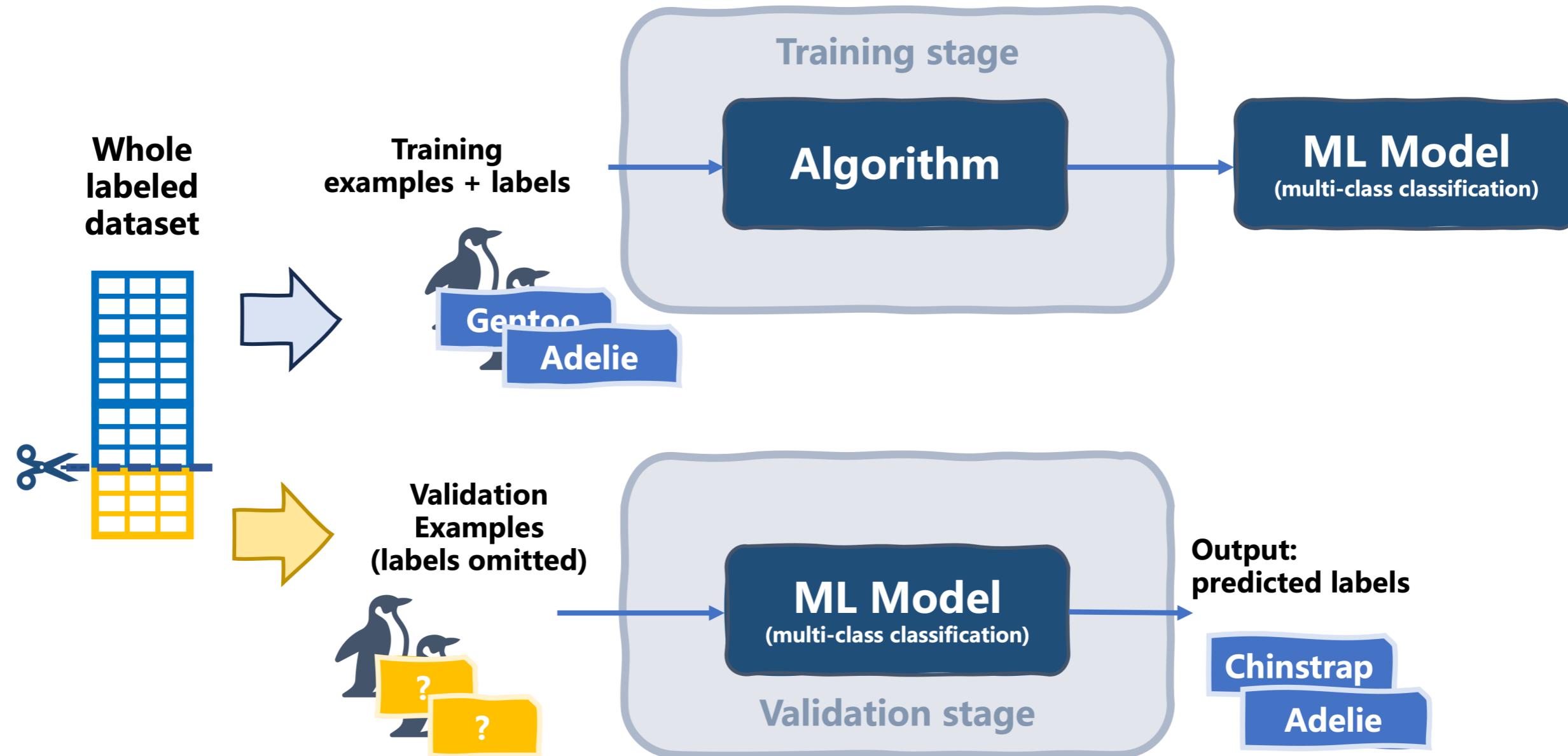
# Measuring performance offline - accuracy



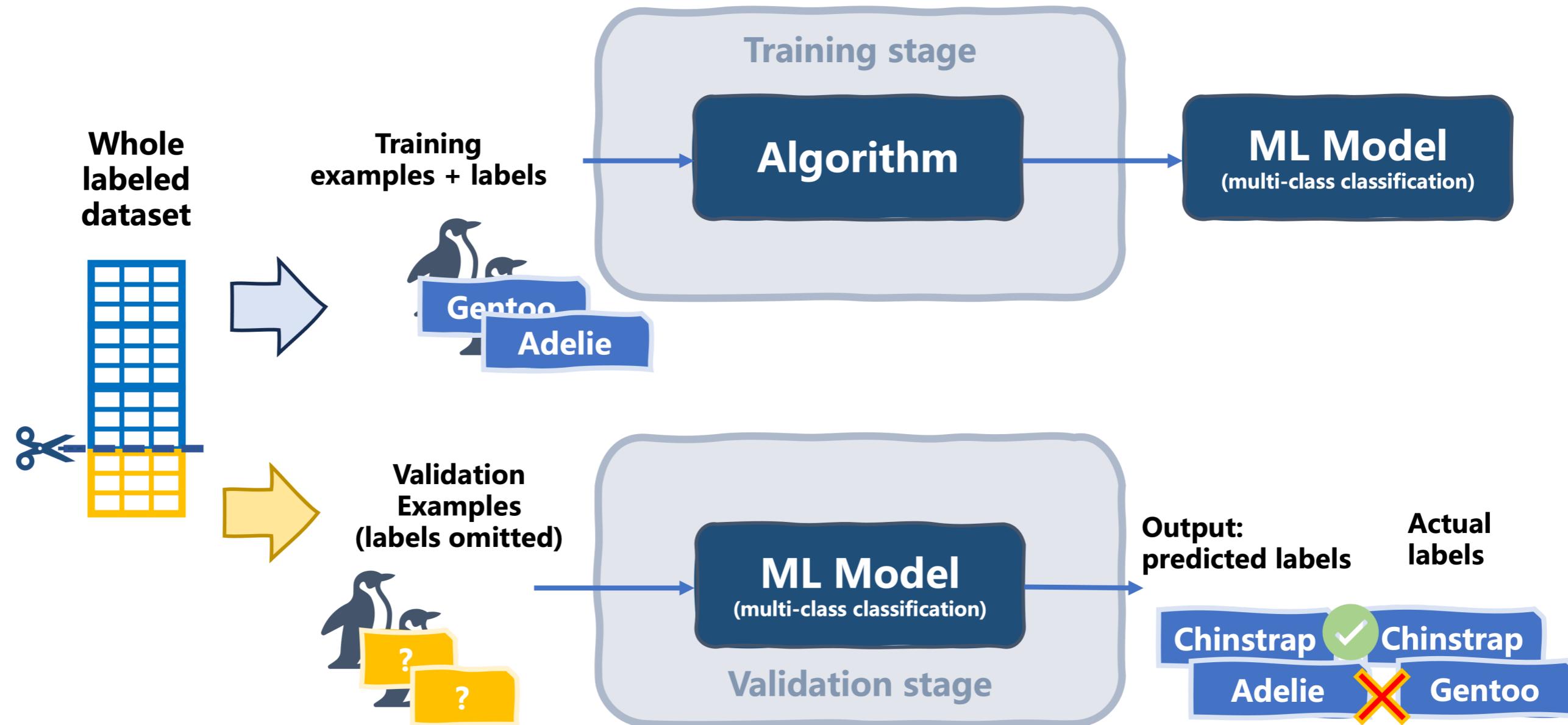
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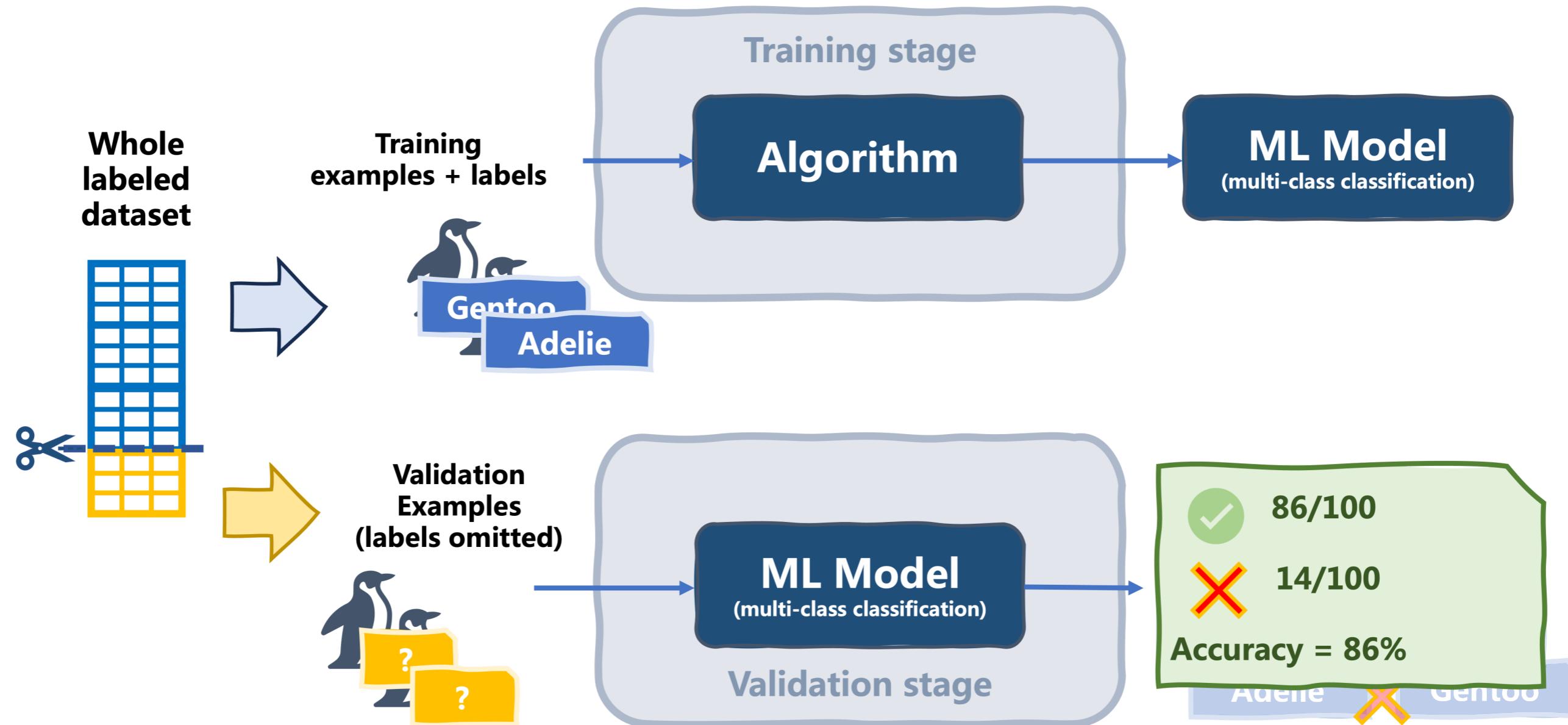
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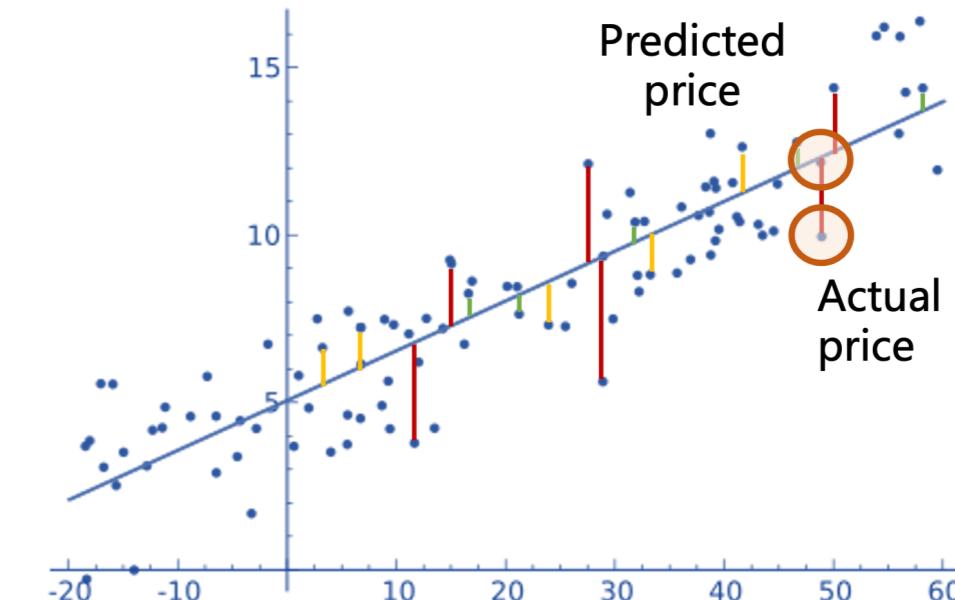
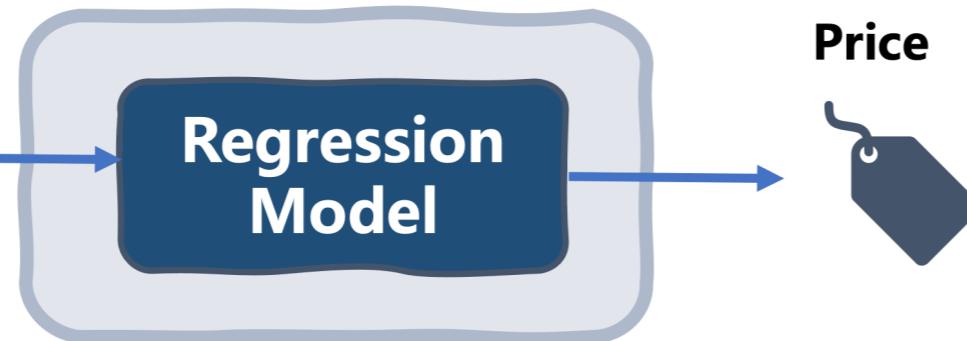


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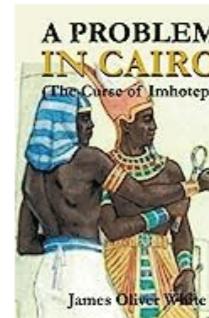
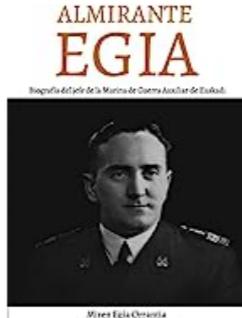
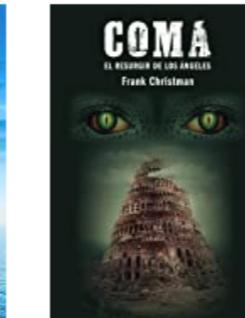
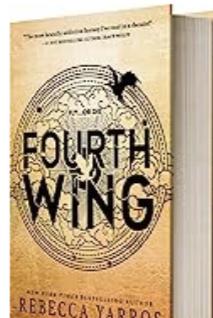
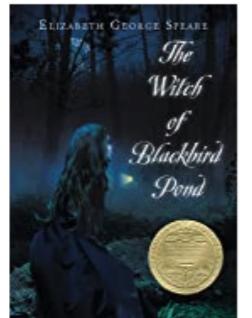
# Beyond accuracy - error and other metrics

Validation examples



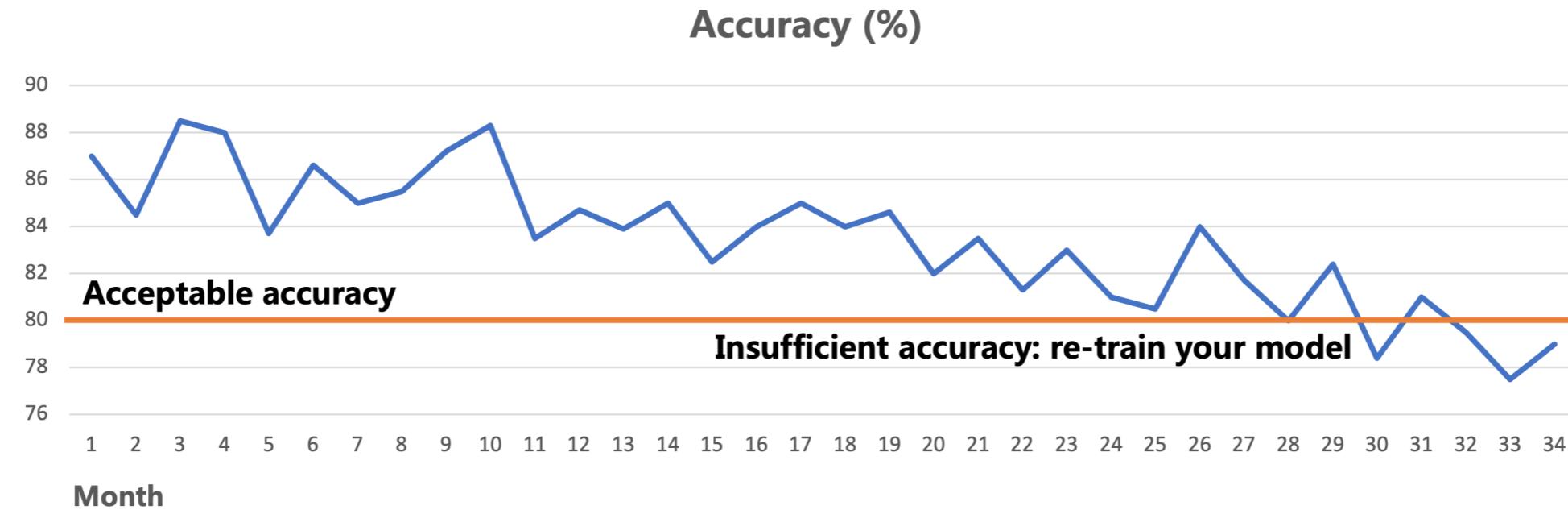
Metrics for search and recommendation engines: ranking quality -relevance of ranking items to the user-, diversity in search results or recommendations, etc.

Top Sellers in Books for you



# Measuring success in production

- AI/ML metrics: accuracy, error, relevance, diversity, ...
  - **Model degradation:** the measured metric value gets worse over the time



- Business metrics: **Key Performance Indicators (KPIs)**
  - Indicator of performance and progress of organization objectives
  - **Example KPIs:** conversion rate, satisfaction (*retail*) ; turnaround time (*healthcare*)

# Risks: what could possibly go wrong?

Possible risks include:

- Data bias
- Lack of transparency
- Ethical concerns
- Dubious system reliability
- Vulnerability to cyber threats

Proof-of-Concept (PoC):

Pilot demonstrator to validate feasibility and potential value + early risk identification

# **Let's practice!**

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# Challenges and success stories

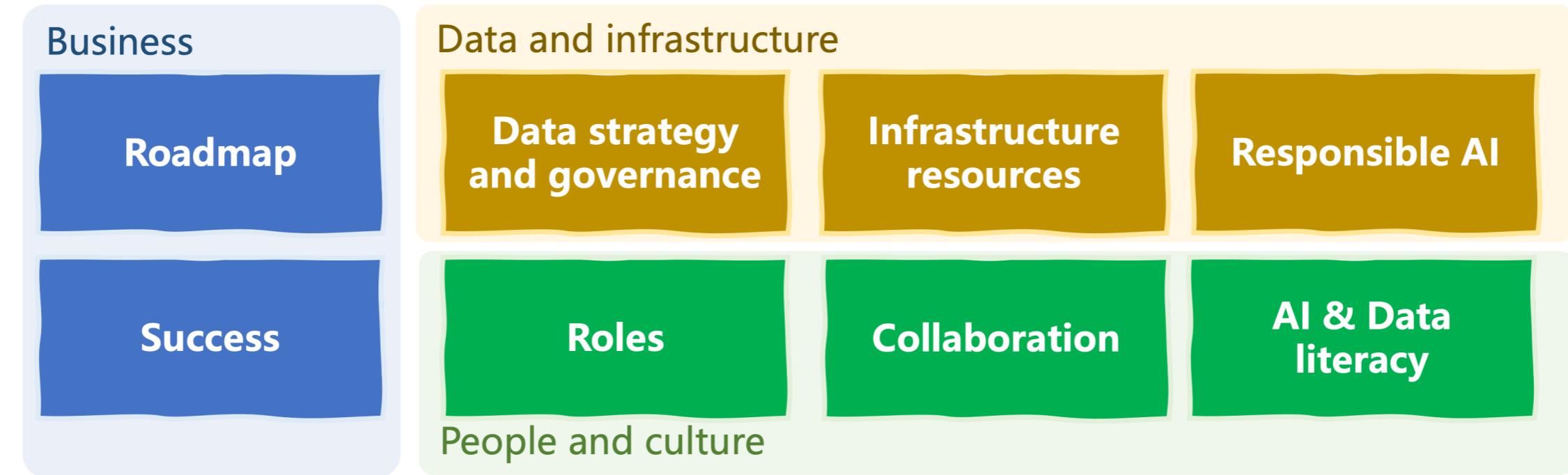
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Senior Data Science & AI Manager

# Challenges

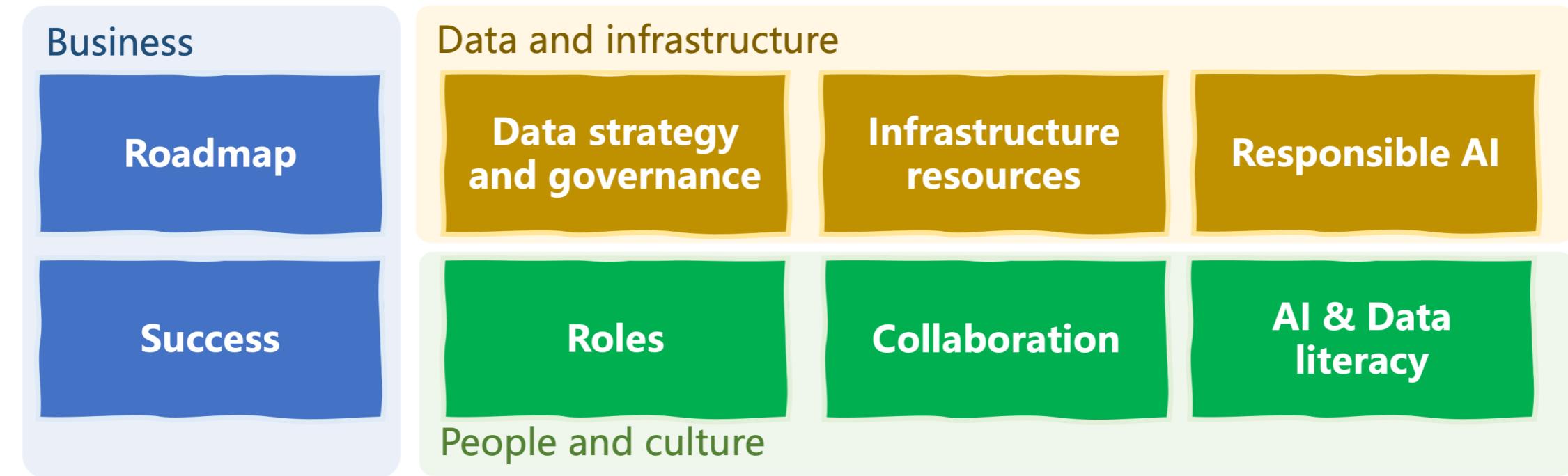


## Challenges to build an AI-driven organization

- Resources: people, infrastructure, budget



# Challenges

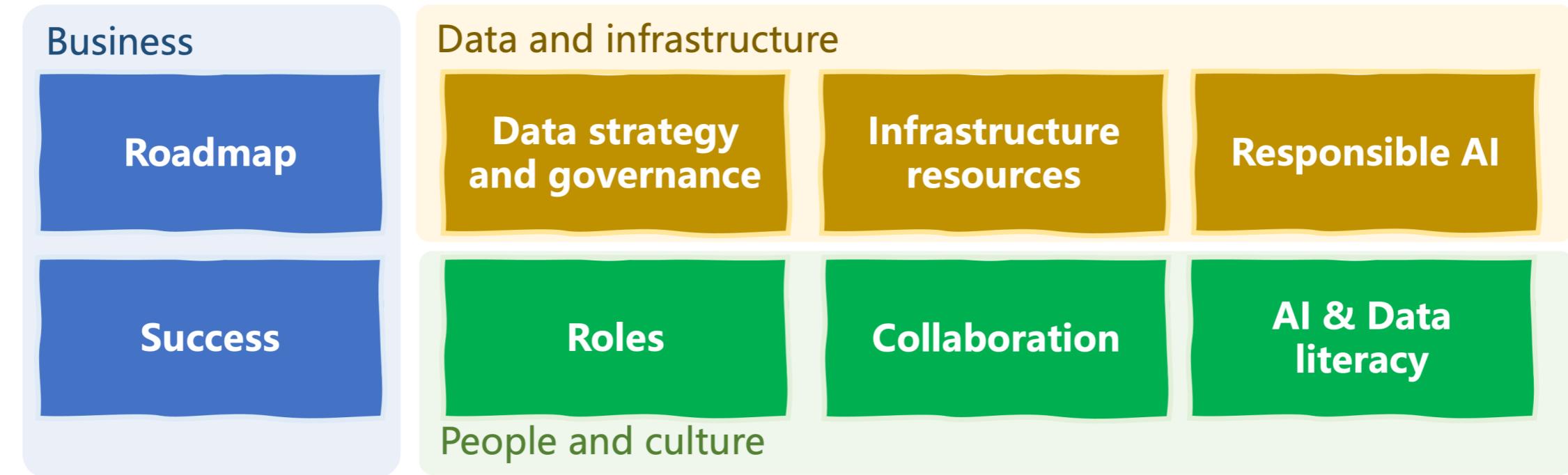


## Challenges to build an AI-driven organization

- **Data:** availability, quality, governance, privacy



# Challenges

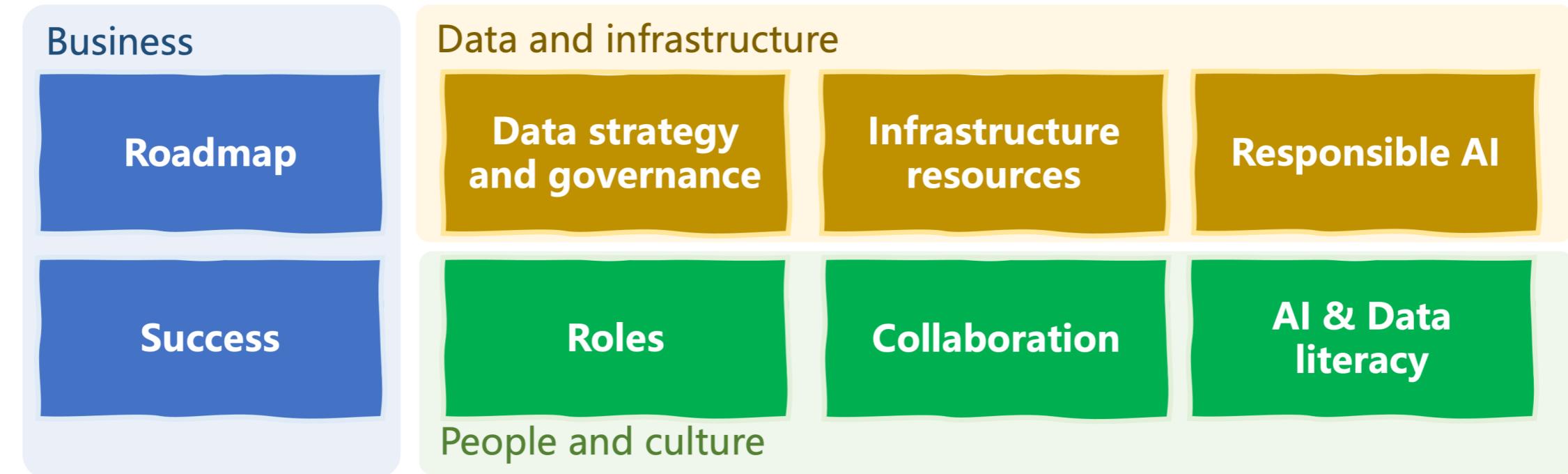


## Challenges to build an AI-driven organization

- **Culture:** rigid mindset, siloed operations



# Challenges



## Challenges to build an AI-driven organization

- Awareness: "*Why AI is critical to the business?*"



# Success stories: Google

**Challenge:**

Data quality and accessibility issues

**Solution:**

**Data governance** frameworks and **data integration** strategies, to leverage large volumes of data effectively



<sup>1</sup> More info: <https://www.youtube.com/watch?v=iCVJdFedSv4>

# Success stories: Airbnb

## Challenge:

Talent needed to become AI-driven

## Solution:

**Talent acquisition and talent development**  
through upskill training in AI and ML



<sup>1</sup> More info: <https://www.linkedin.com/pulse/what-made-airbnb-data-team-special-5-trait-i-look-when-claire-lebarz/>

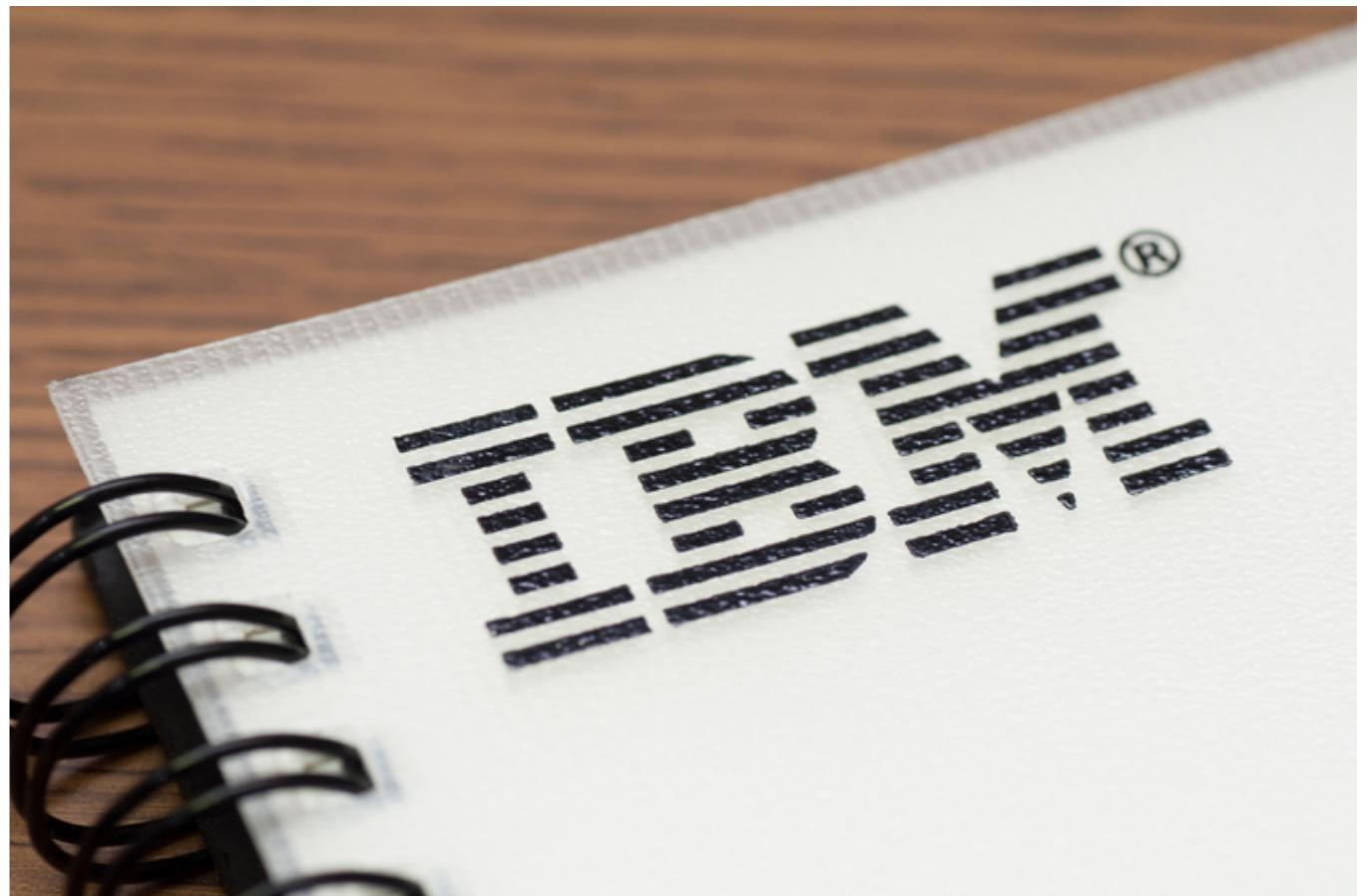
# Success stories: IBM

## Challenge:

Address ethical and regulatory AI issues

## Solution:

AI Ethics Board for responsible AI,  
guidelines to mitigate algorithmic bias,  
engagement with policymakers



<sup>1</sup> More info: <https://www.ibm.com/downloads/cas/4DPJK92W>

# Success stories: Netflix

## Challenge:

Large-scale computing infrastructure needed

## Solution:

Cloud infrastructure investments, AI tools for recommendation, data processing workflows



<sup>1</sup> More info: <https://valohai.com/blog/building-machine-learning-infrastructure-at-netflix/>

# **Let's practice!**

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