Establishing an AI culture

UNDERSTANDING ARTIFICIAL INTELLIGENCE

Maarten Van den Broeck
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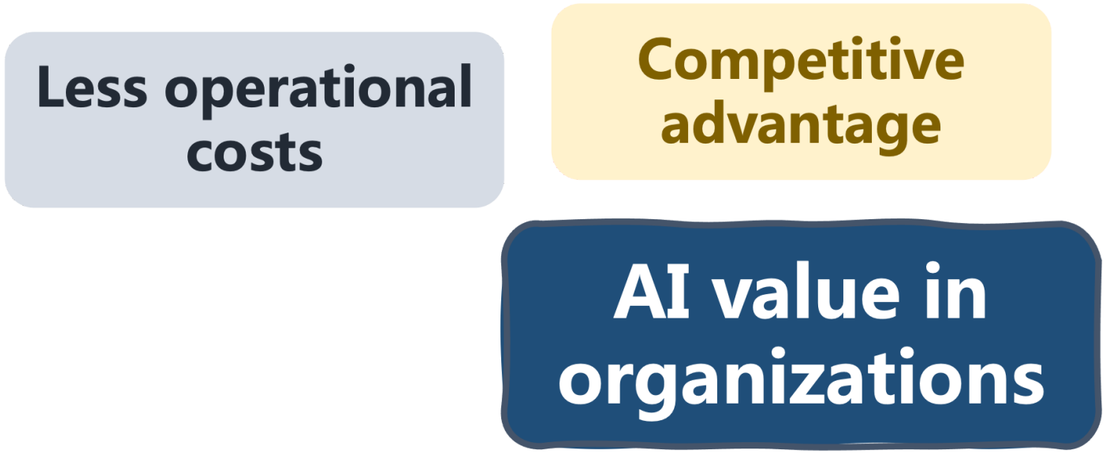
The value of AI in organizations

The value of AI in organizations

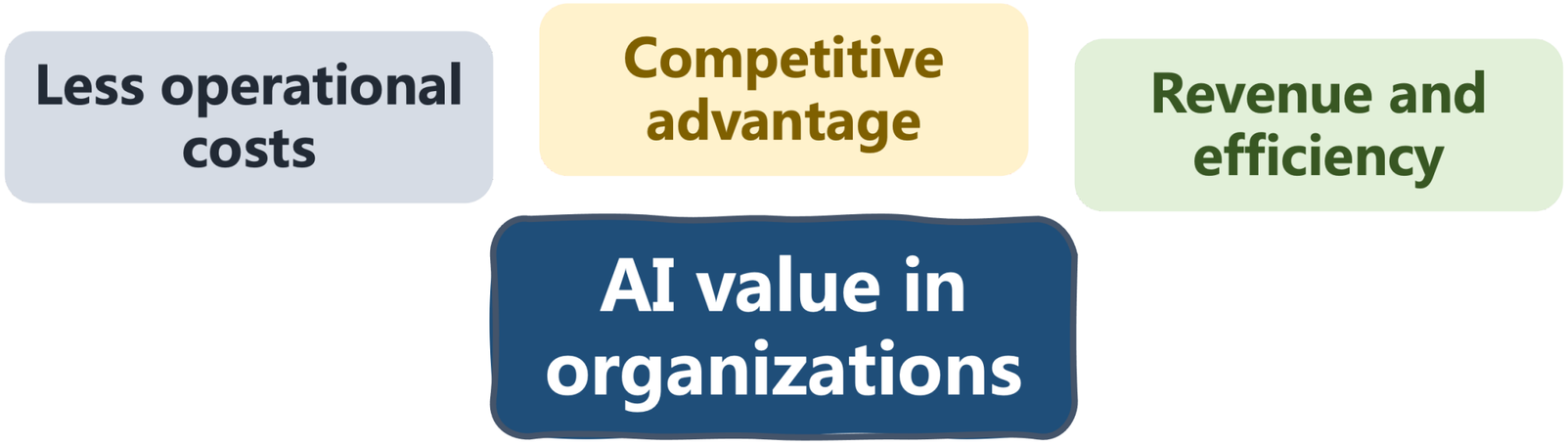
Competitive advantage

AI value in organizations

The value of AI in organizations



The value of AI in organizations



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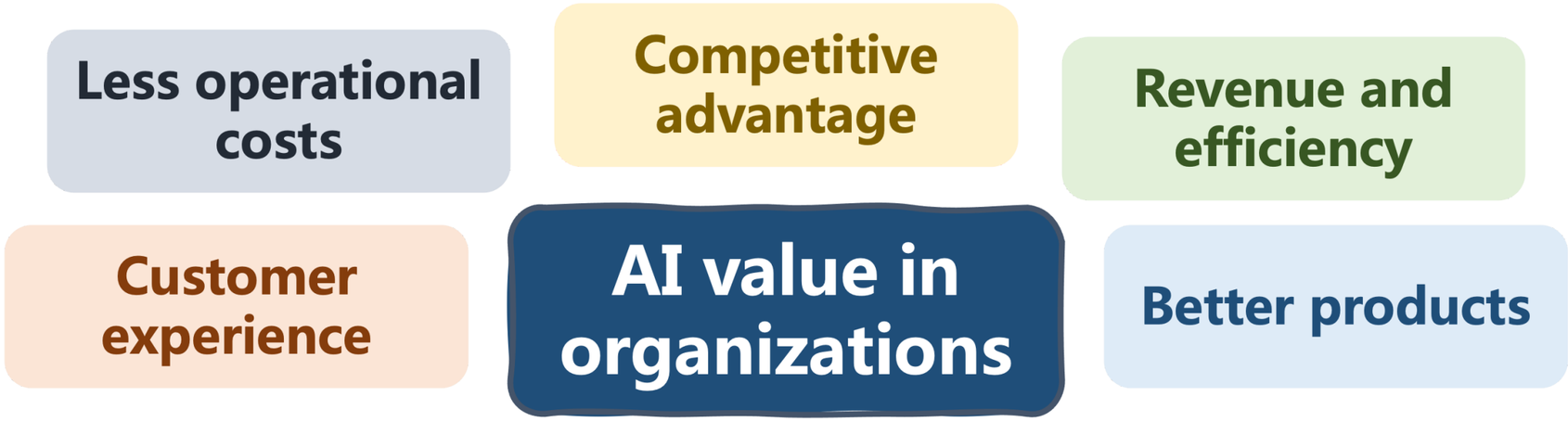
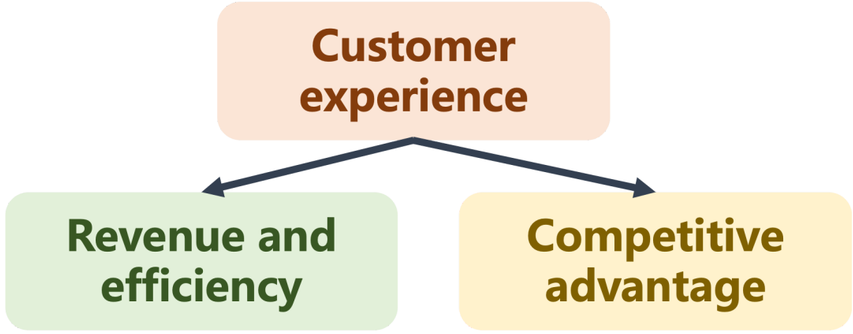


AI for personalization example: identifying customers' shopping habits leads to more loyalty and increased sales.



Building an AI-driven organization

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

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

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3. **Infrastructure resources:** scalable computing infrastructure and AI tools

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3. **Infrastructure resources:** scalable computing infrastructure and AI tools

4. **Roles**: talented AI, Machine Learning, and Data Science roles

Building an AI-driven organization

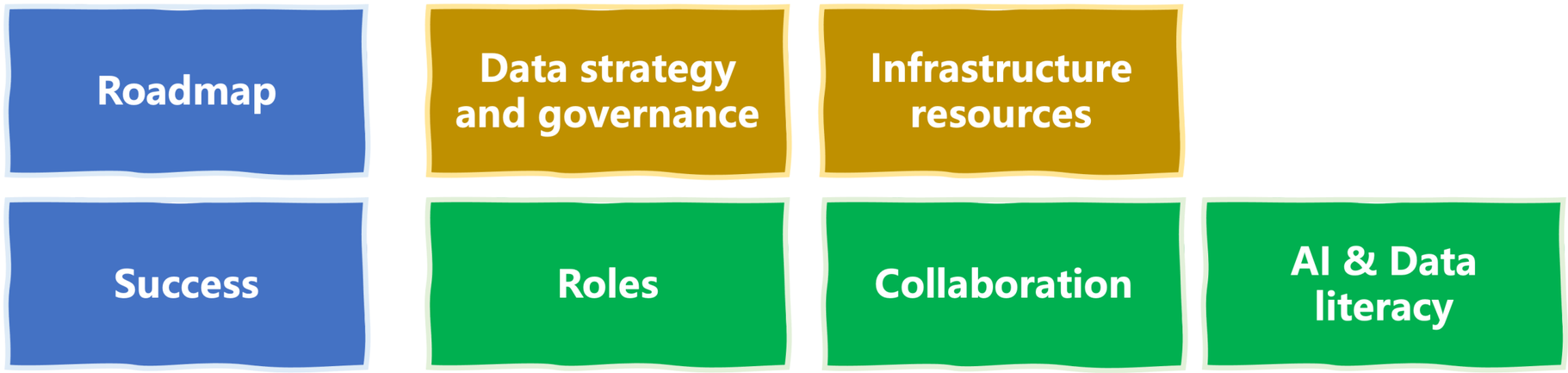
5. Collaboration: cross-functional AI projects

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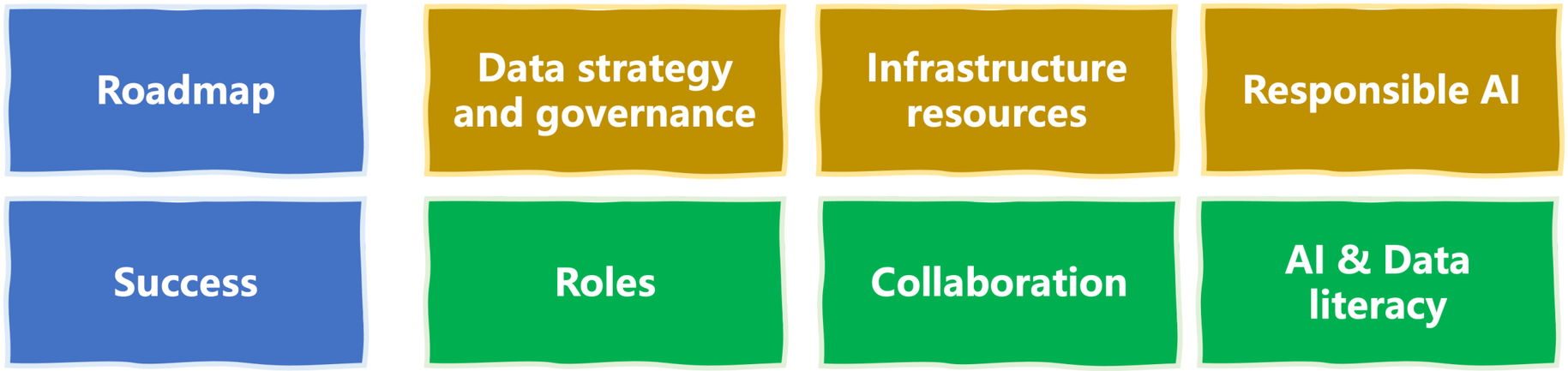
7. **AI & Data literacy**: continuous AI and data evangelization for everyone

Building an AI-driven organization



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

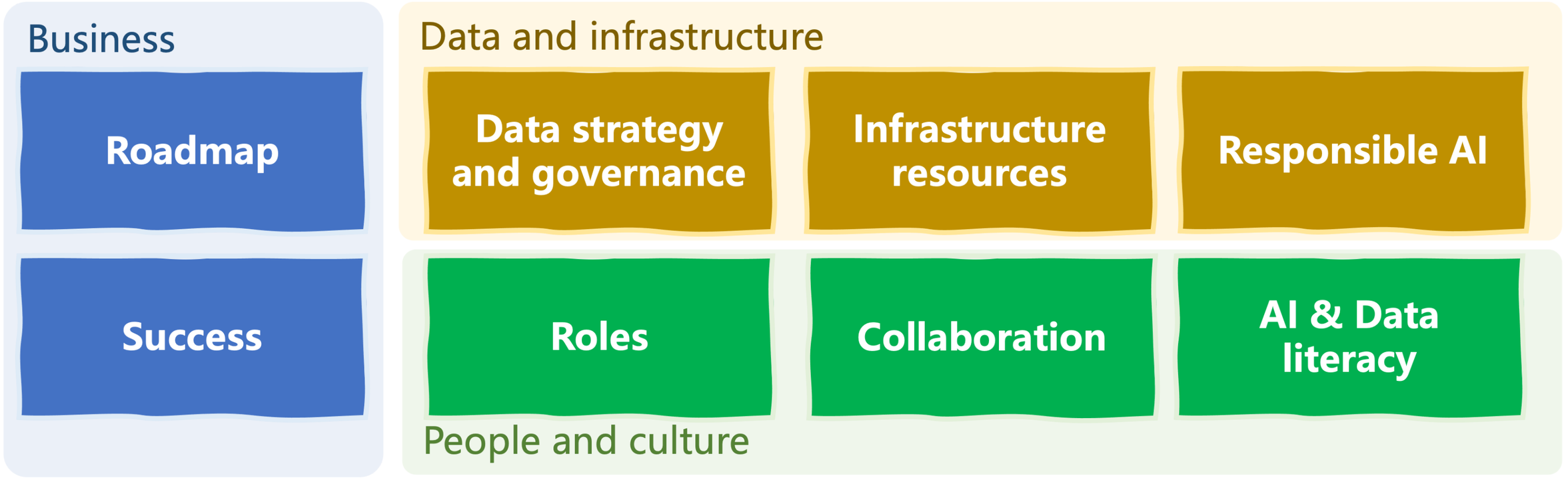
6. **Success:** define and pursue success aims, e.g. *customer-centric*, impact on *revenue*, etc.

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

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

Business

Roadmap

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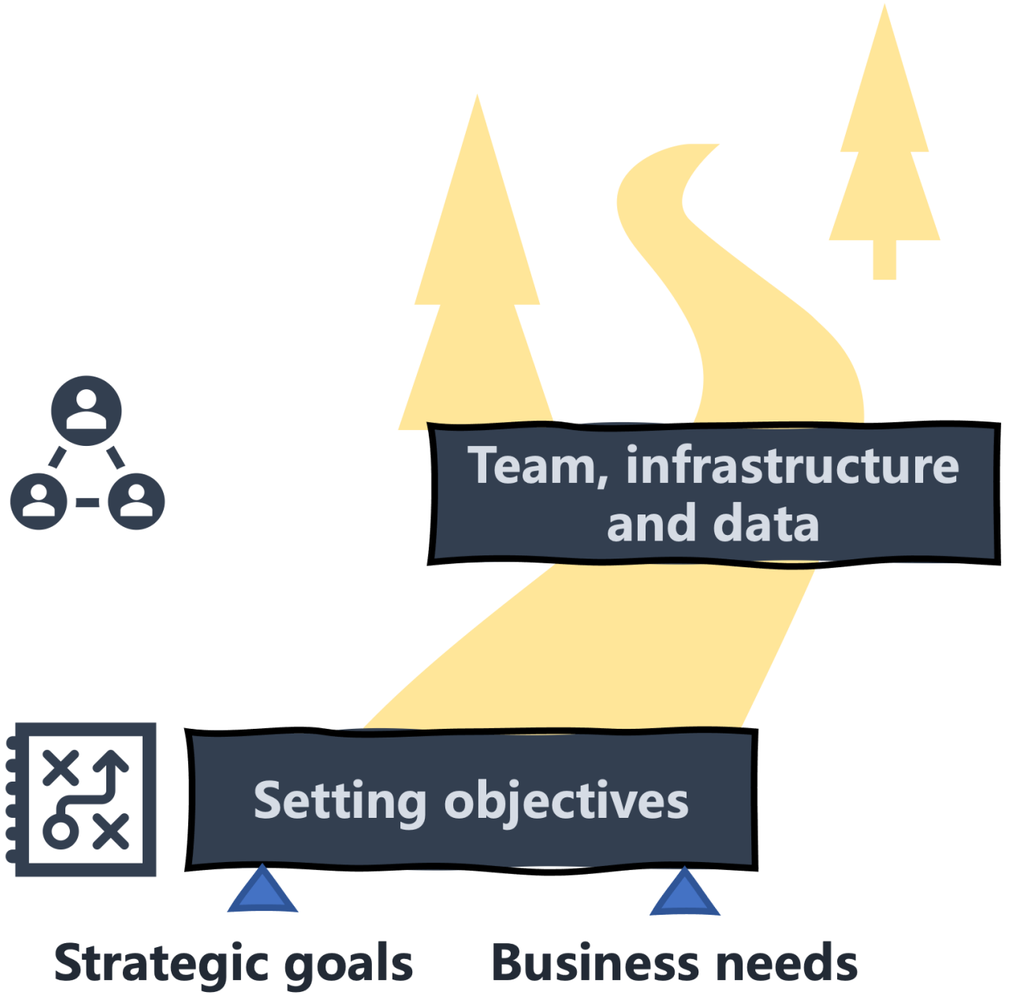
Roadmap



AI-driven organization: roadmap

Business

Roadmap

Let's practice!

UNDERSTANDING ARTIFICIAL INTELLIGENCE

Data strategy, resources, and people

UNDERSTANDING ARTIFICIAL INTELLIGENCE

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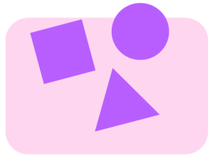
Data strategy and governance

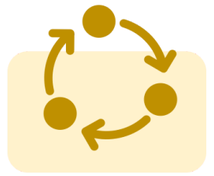
> **Data strategy:** design and development of data-centric approaches for information extraction and business decision-making

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







AI infrastructure

Cloud-based AI infrastructure

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

- **Pros:** high scalability, cost-effectiveness
- **Cons:** data location, Internet needed

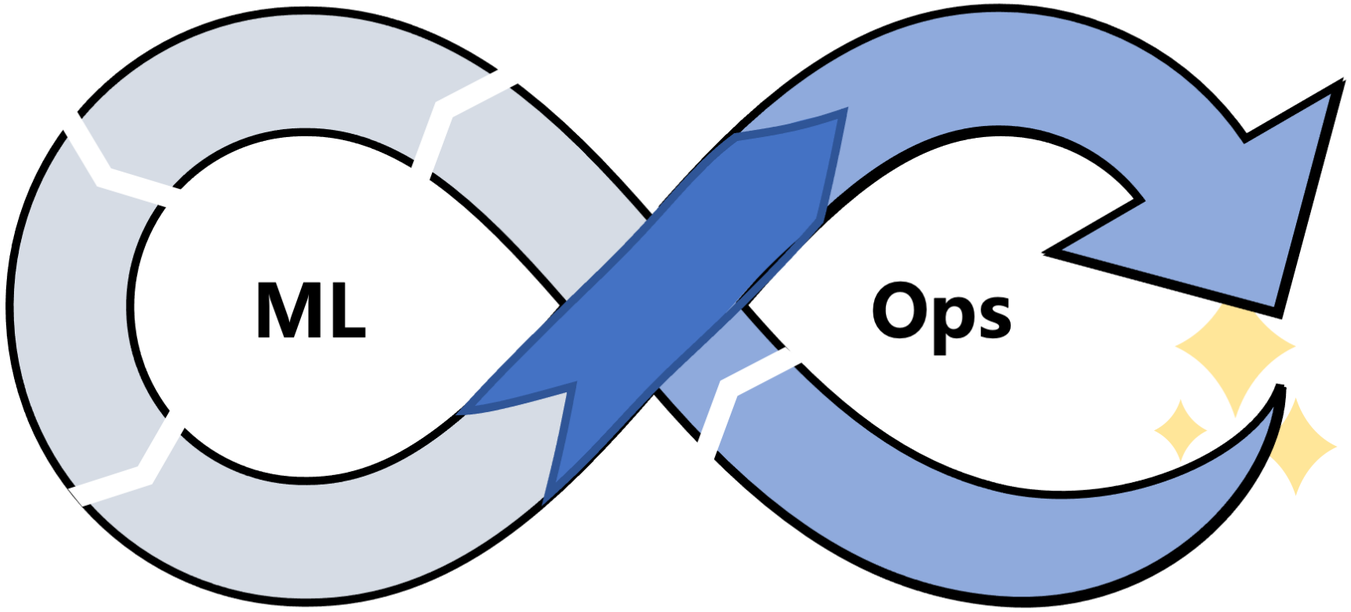
On premises (self-hosted) AI infrastructure

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

- **Pros:** enhanced data control, lower latency
- **Cons:** upfront costs, limited scalability

MLOps methodology

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



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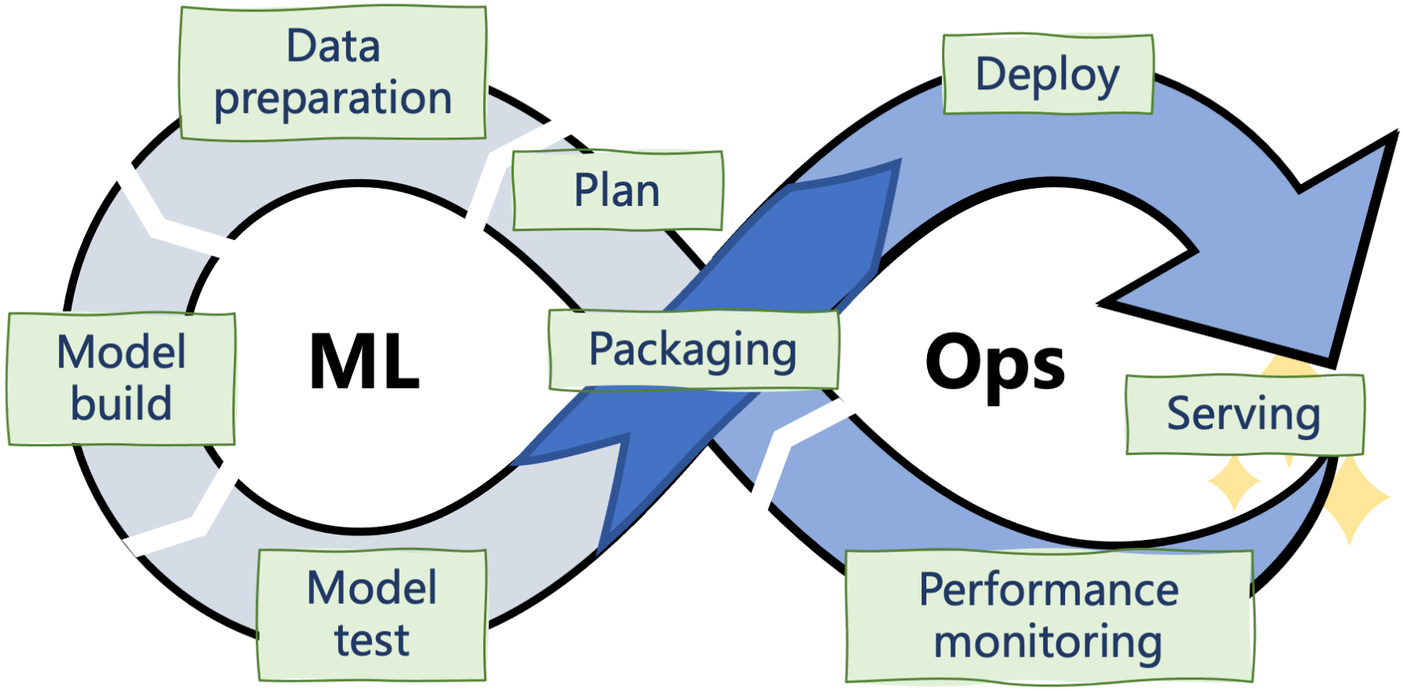
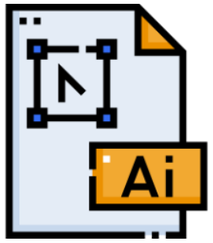


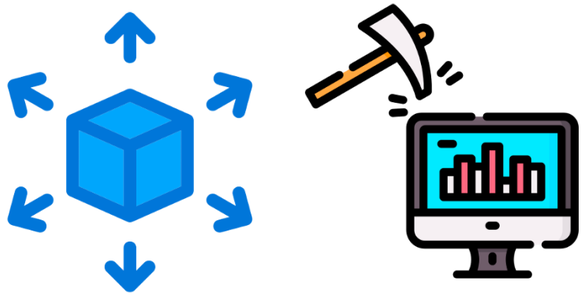
AI-related roles

AI Architect

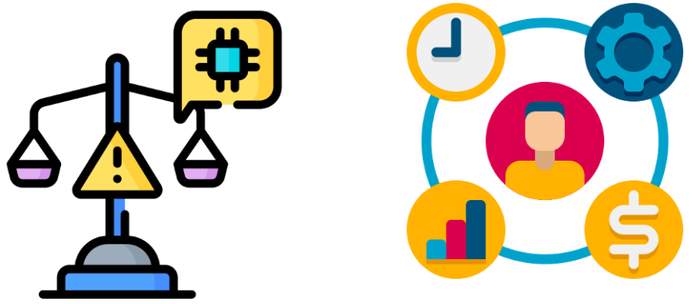


Data Scientist

Machine Learning and Data Engineer



Others: AI Ethicist, Project Manager



Building your AI team

Leadership and management

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

Execution

- AI architects: selecting the tools
- Data scientists: analyze data and train and evaluate models
- ML & data engineers: deploy models intro production and building data pipelines

Support

Building your AI team

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Execution

- AI architects: selecting the tools
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Support: AI ethicist; domain experts

Let's practice!

UNDERSTANDING ARTIFICIAL INTELLIGENCE

Is your deployed AI system successful?

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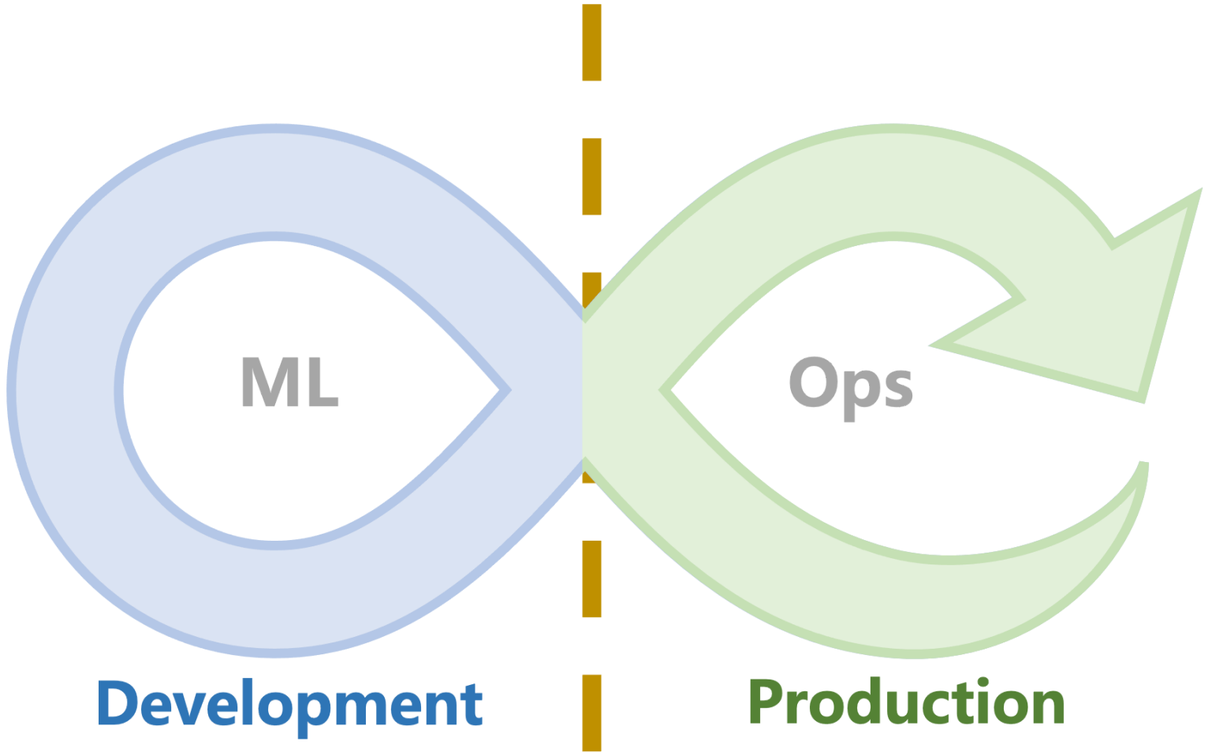
When to measure success?



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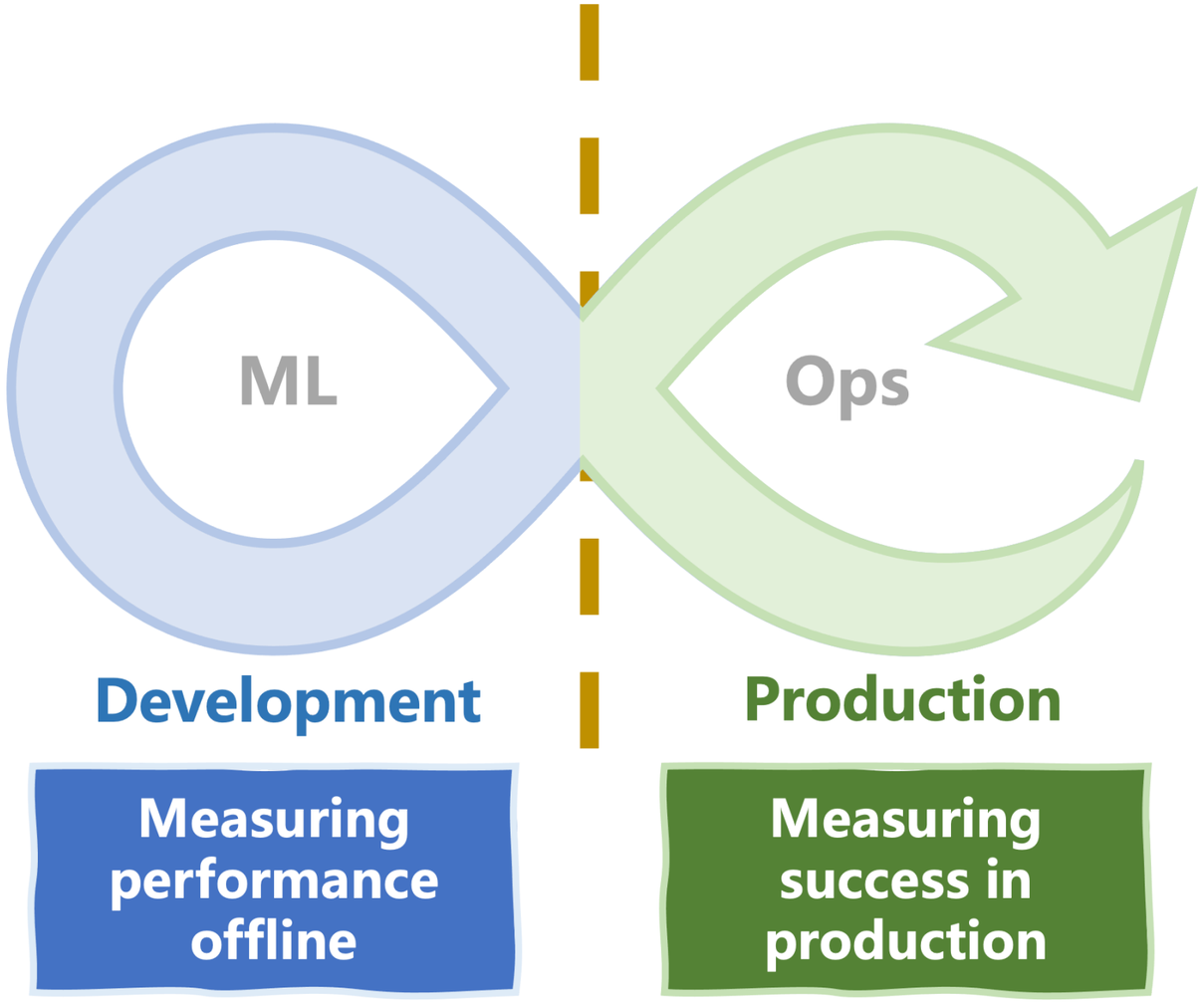
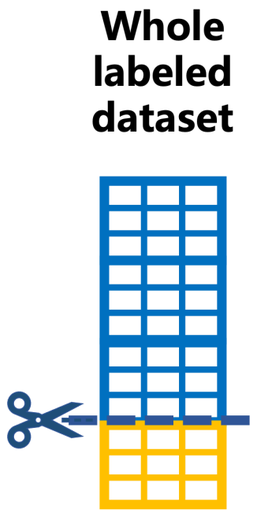


Measuring performance offline - accuracy



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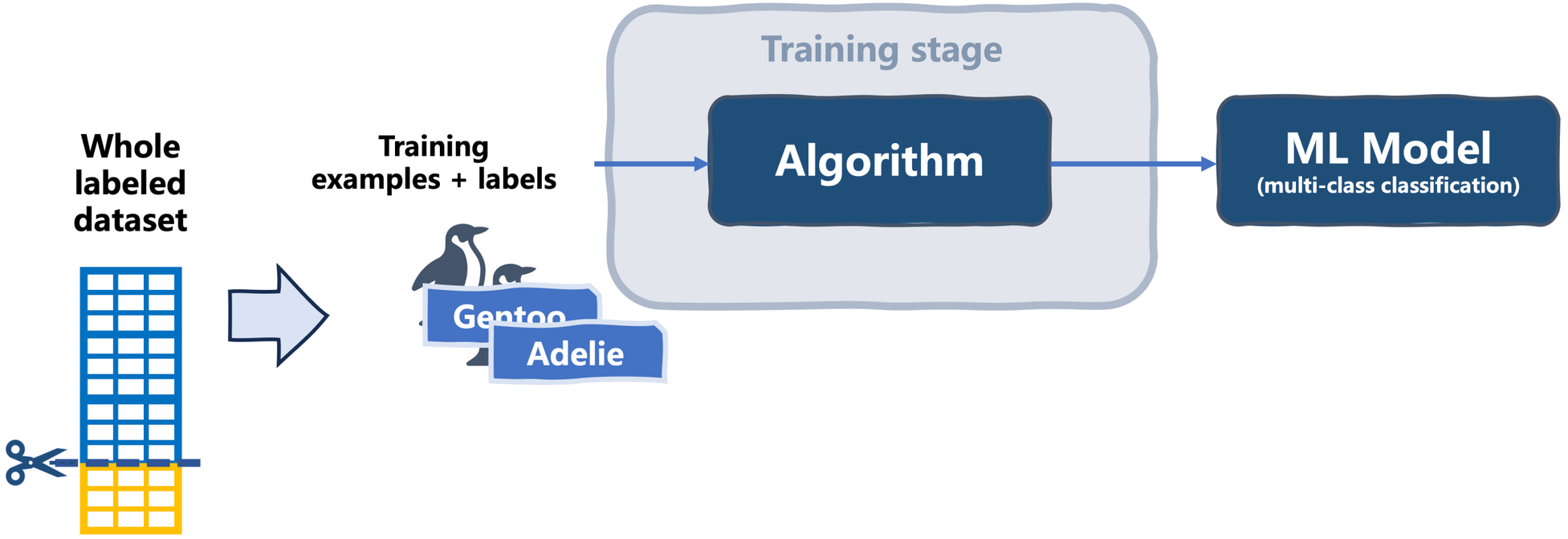

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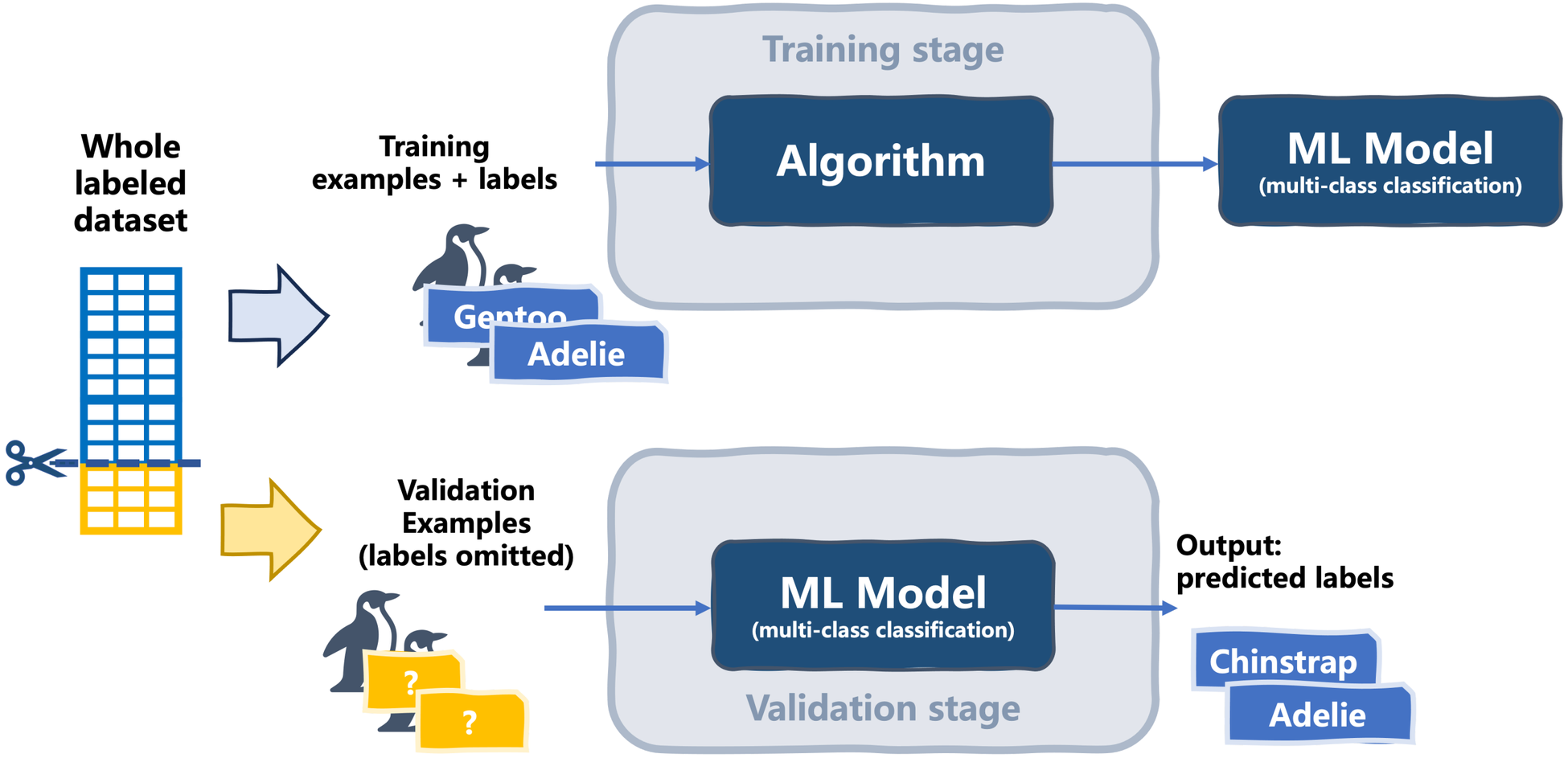

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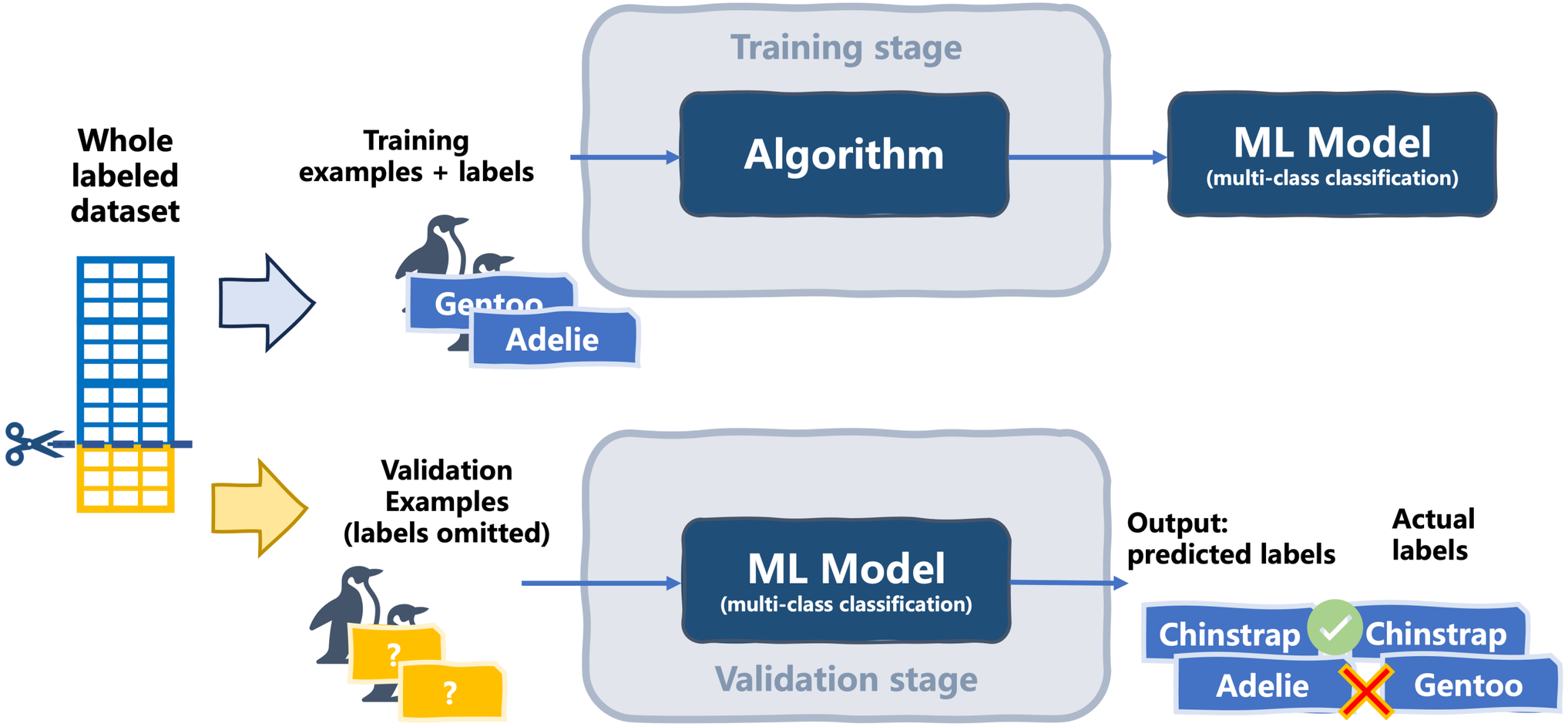

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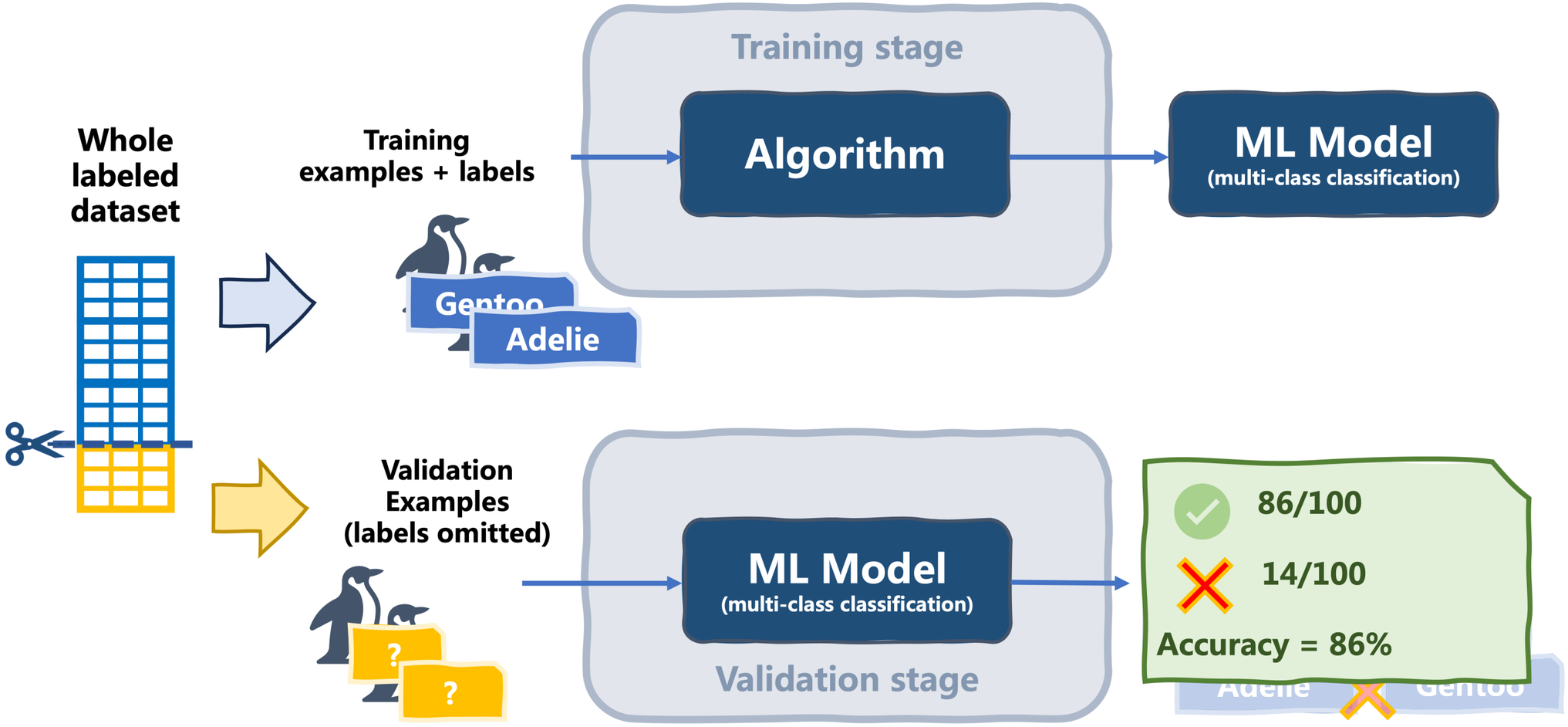
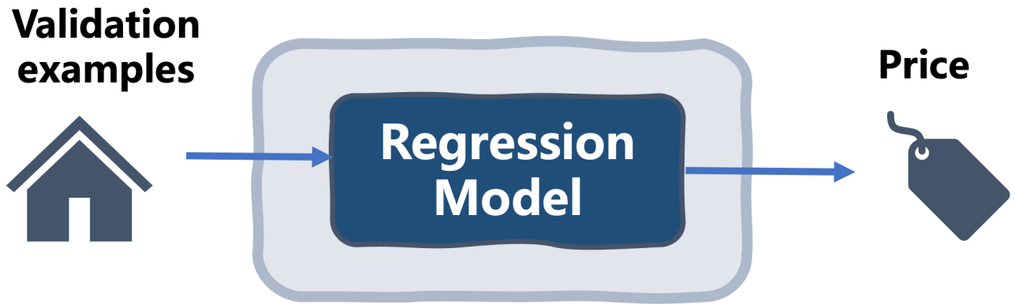
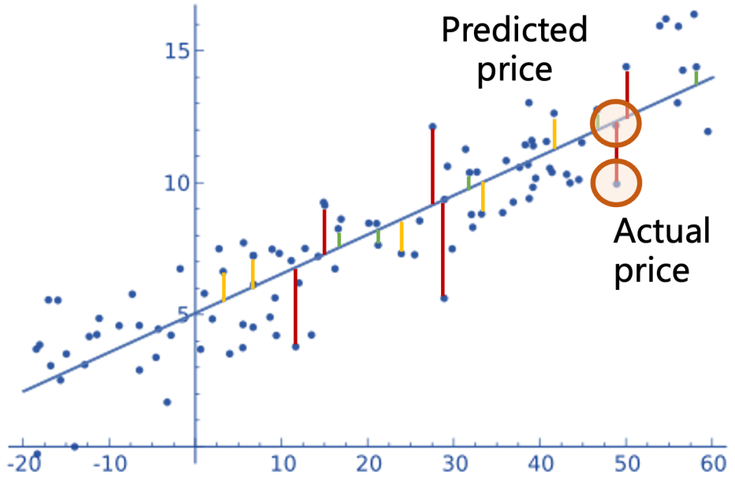
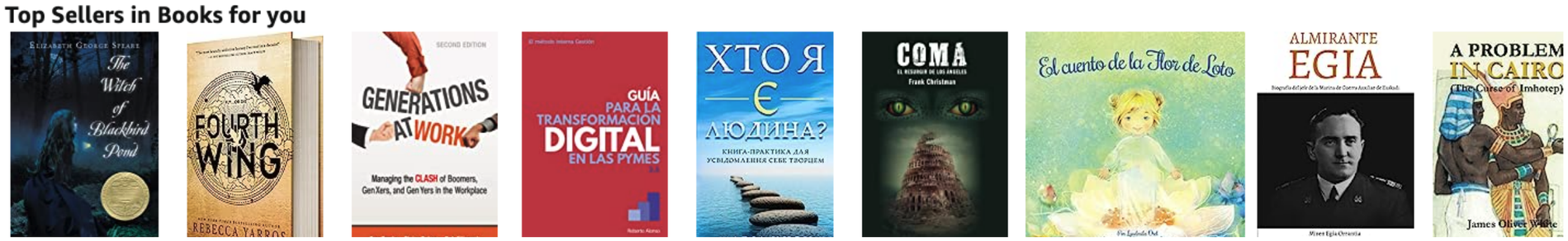


Beyond accuracy - error and other metrics



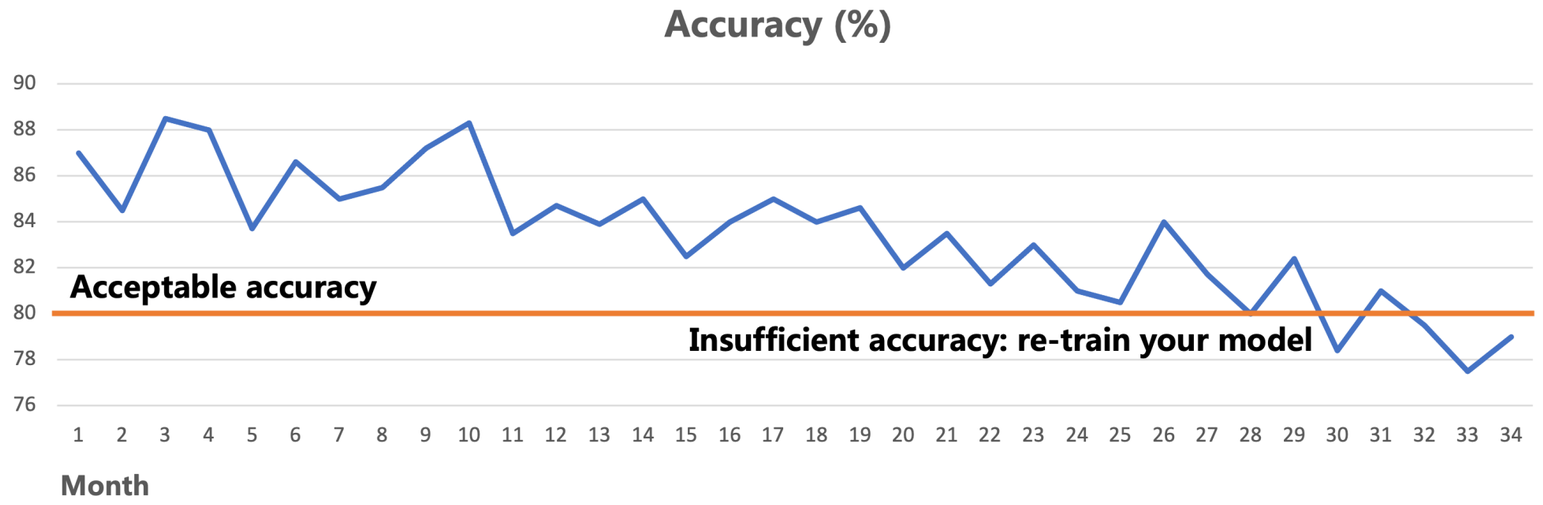


Metrics for search and recommendation engines: ranking quality -relevance of ranking items to the user-, diversity in search results or recommendations, etc.



Measuring success in production

- **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

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!

UNDERSTANDING ARTIFICIAL INTELLIGENCE

Challenges and success stories

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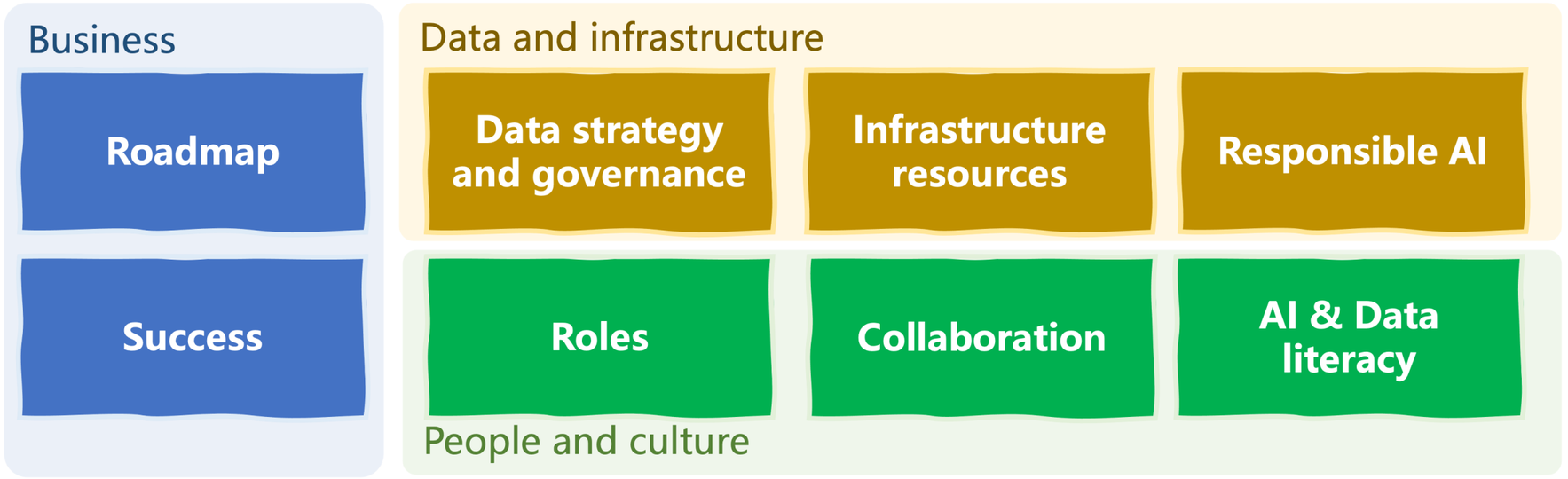
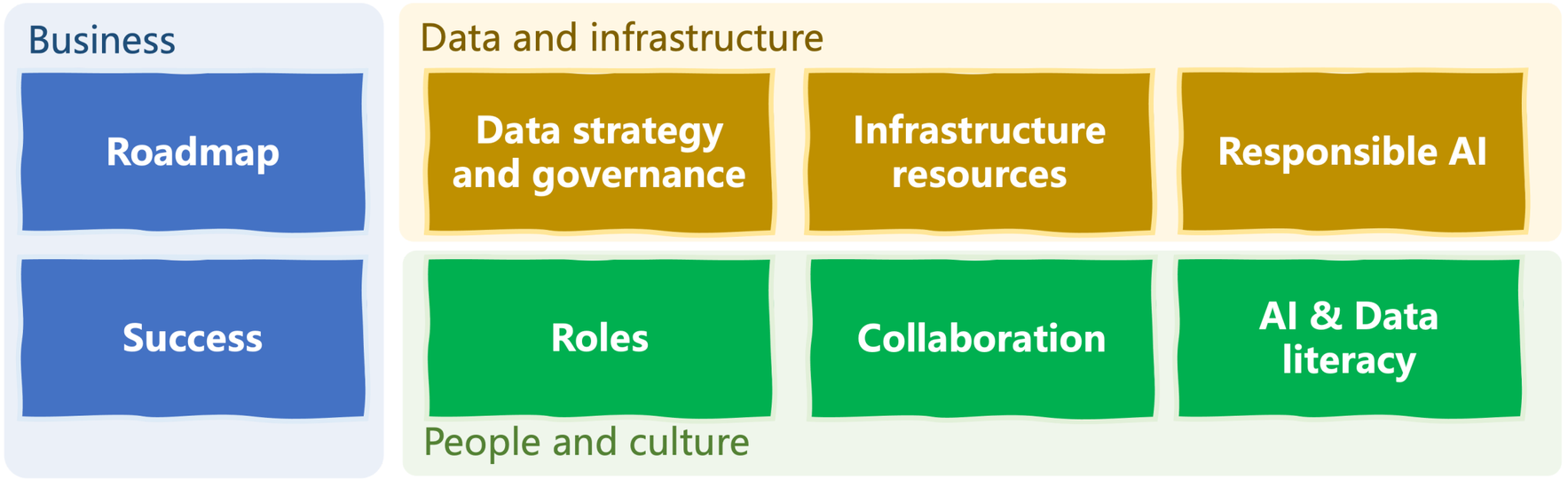
Challenges



Challenges to build an AI-driven organization

- **Resources:** people, infrastructure, budget

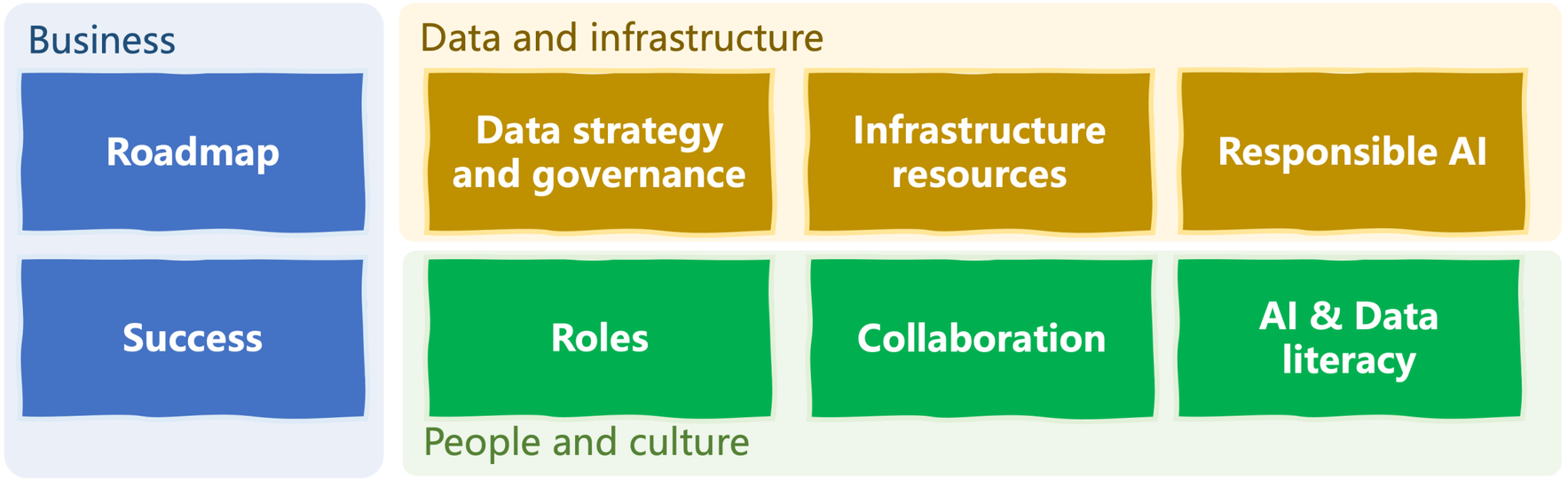
Challenges



Challenges to build an AI-driven organization

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

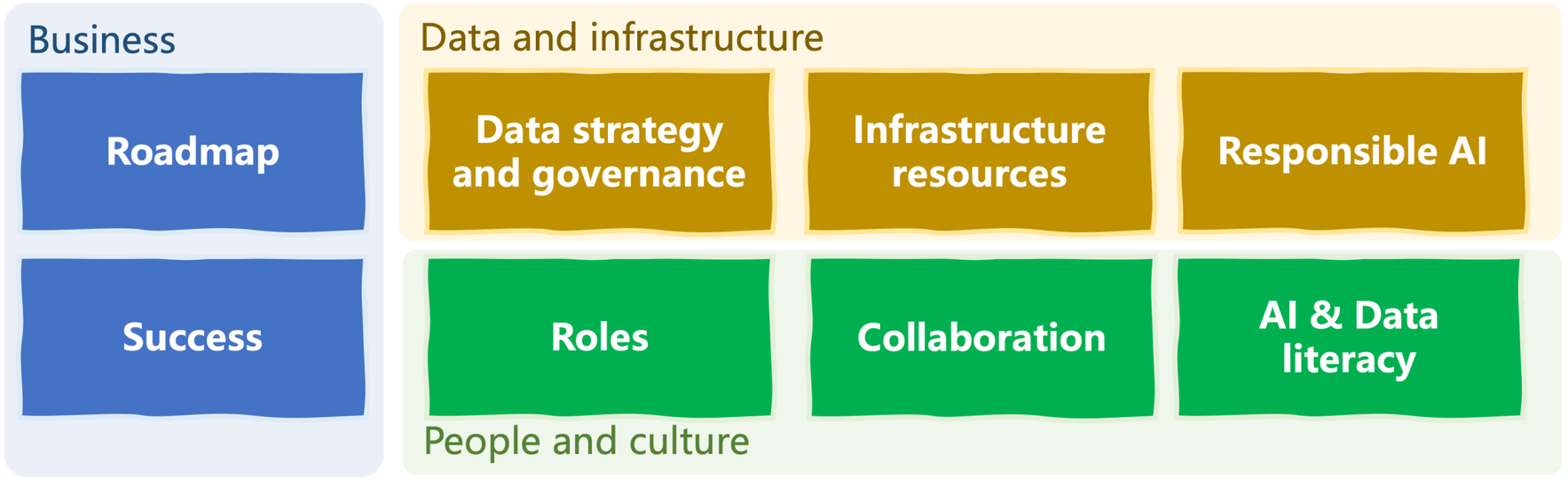
Challenges



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

Success stories: Airbnb

Challenge:

- Talent needed to become AI-driven

Solution:

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

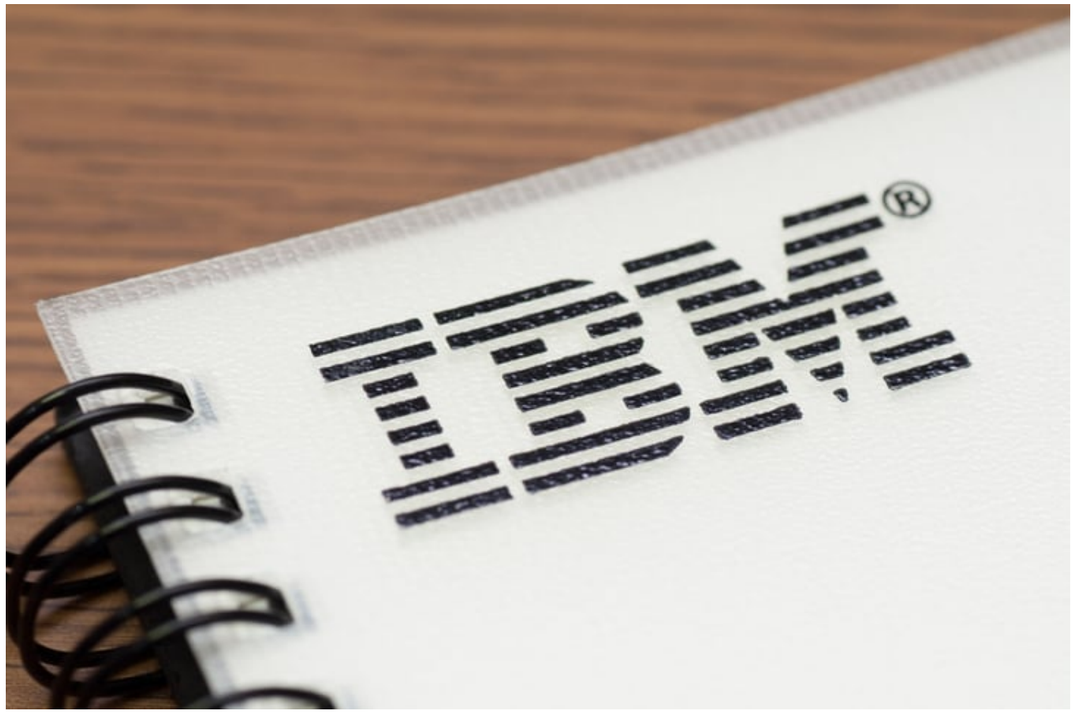
Success stories: IBM

Challenge:

- Address ethical and regulatory AI issues

Solution:

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



Success stories: Netflix

Challenge:

- Large-scale computing infrastructure needed

Solution:

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

Let's practice!

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