IANA

INTERMODAL ASSOCIATION
OF NORTH AMERICA

Intermodal Data:
A Practical Introduction to Understanding its Full Potential

Tuesday, April 7th at 2:00 p.m.

Housekeeping

- Speakers will be followed by audience question and answer session
- Audience audio will be muted
- Submit questions at any time for Q&A session at the end of the webinar presentations
- A recorded version of this webinar, including the slides, will be available in the near future

This Webinar is part of the *Business Intelligence Services Series*

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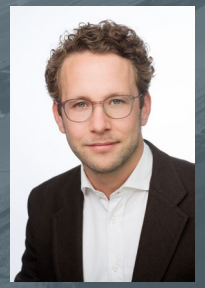
Radar

Intermodal Data:
A Practical Introduction to Understanding its Full Potential



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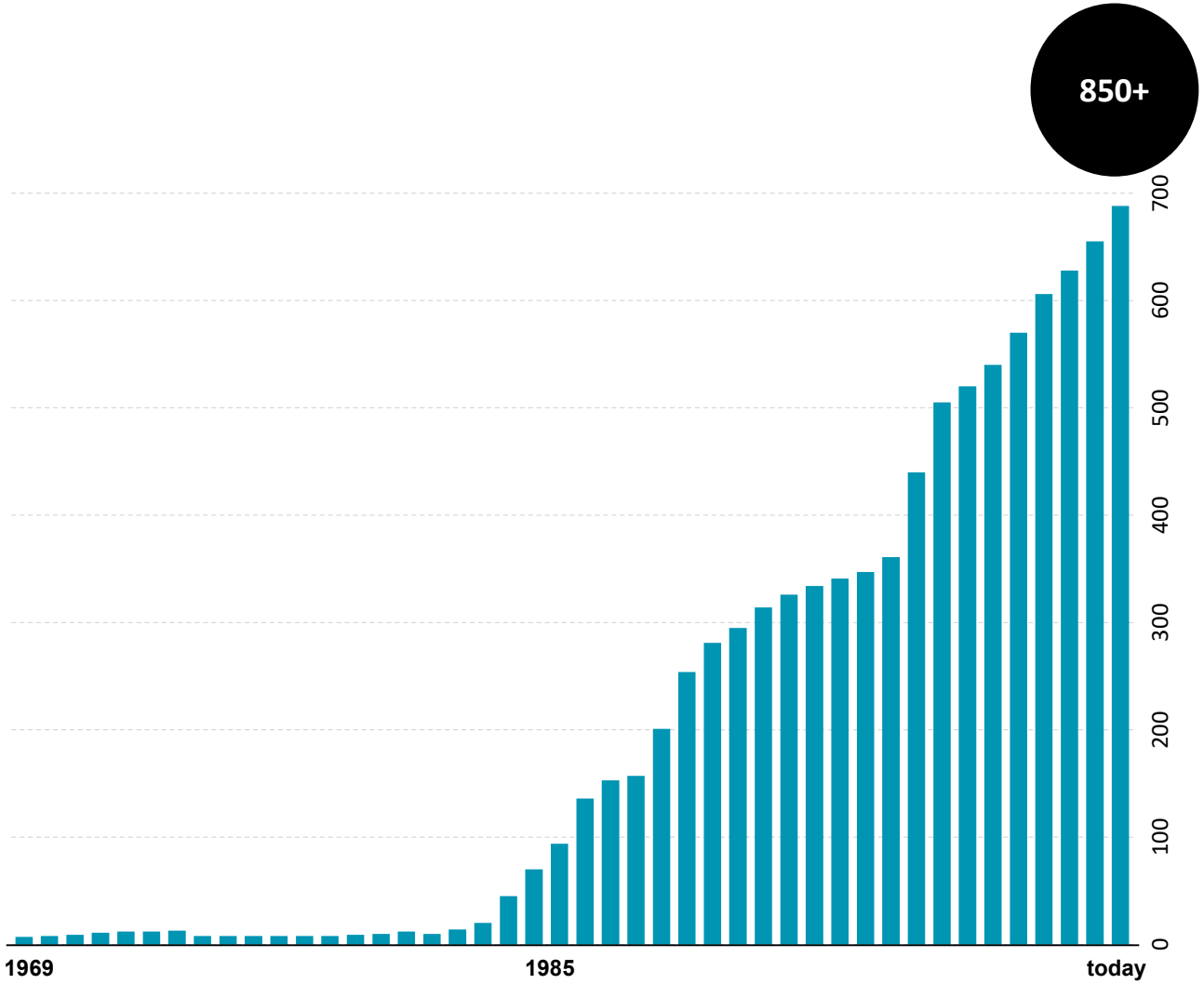

Background and Vision

A. Established in 1969

B. Since 1985 always profitable

C. Organically growing, no external investors

D. Internal ownership

E. Today more than 850 employees

F. Principal corporate objective: long-term sustainability.

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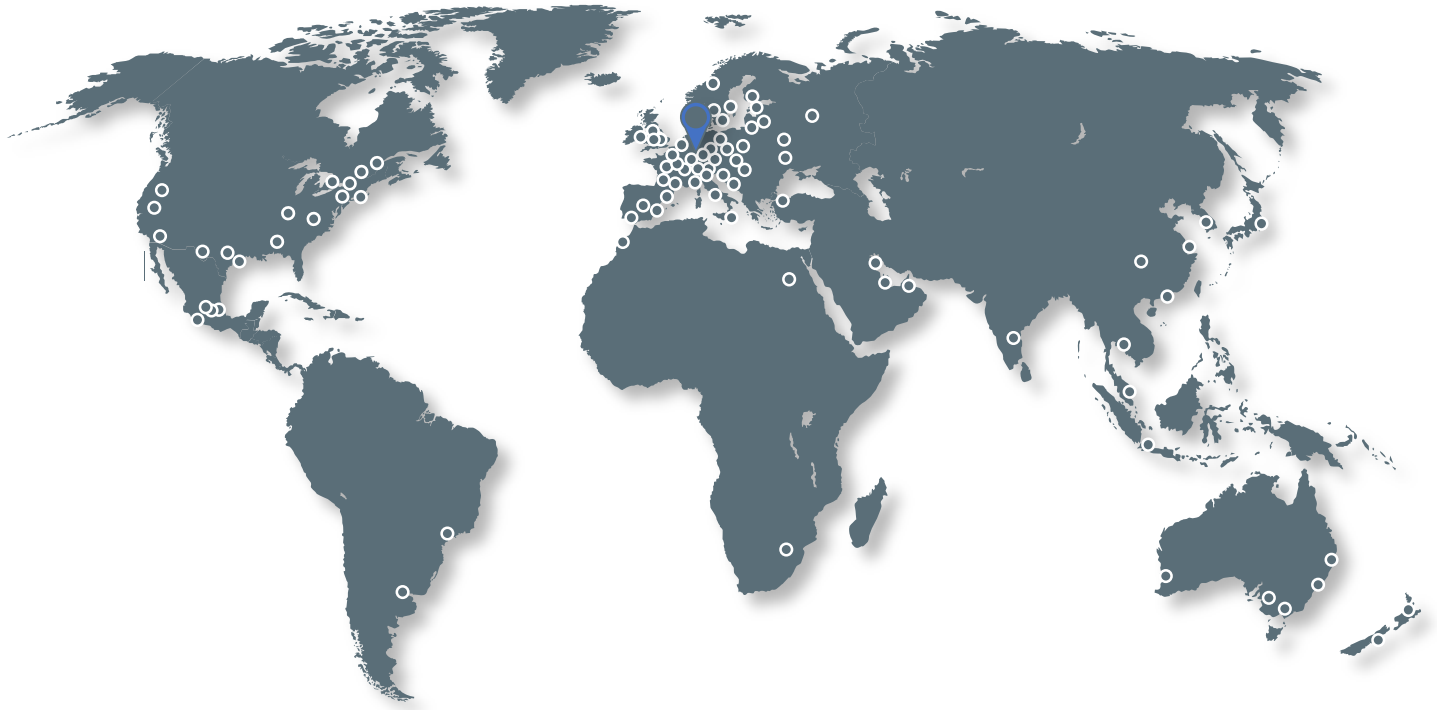

Background and Vision

A. Established in 1969

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LONG-TERM CUSTOMER RELATIONSHIPS

Audi (1986)
Daimler (1986)
British Airways (1991)
HHLA (2000)

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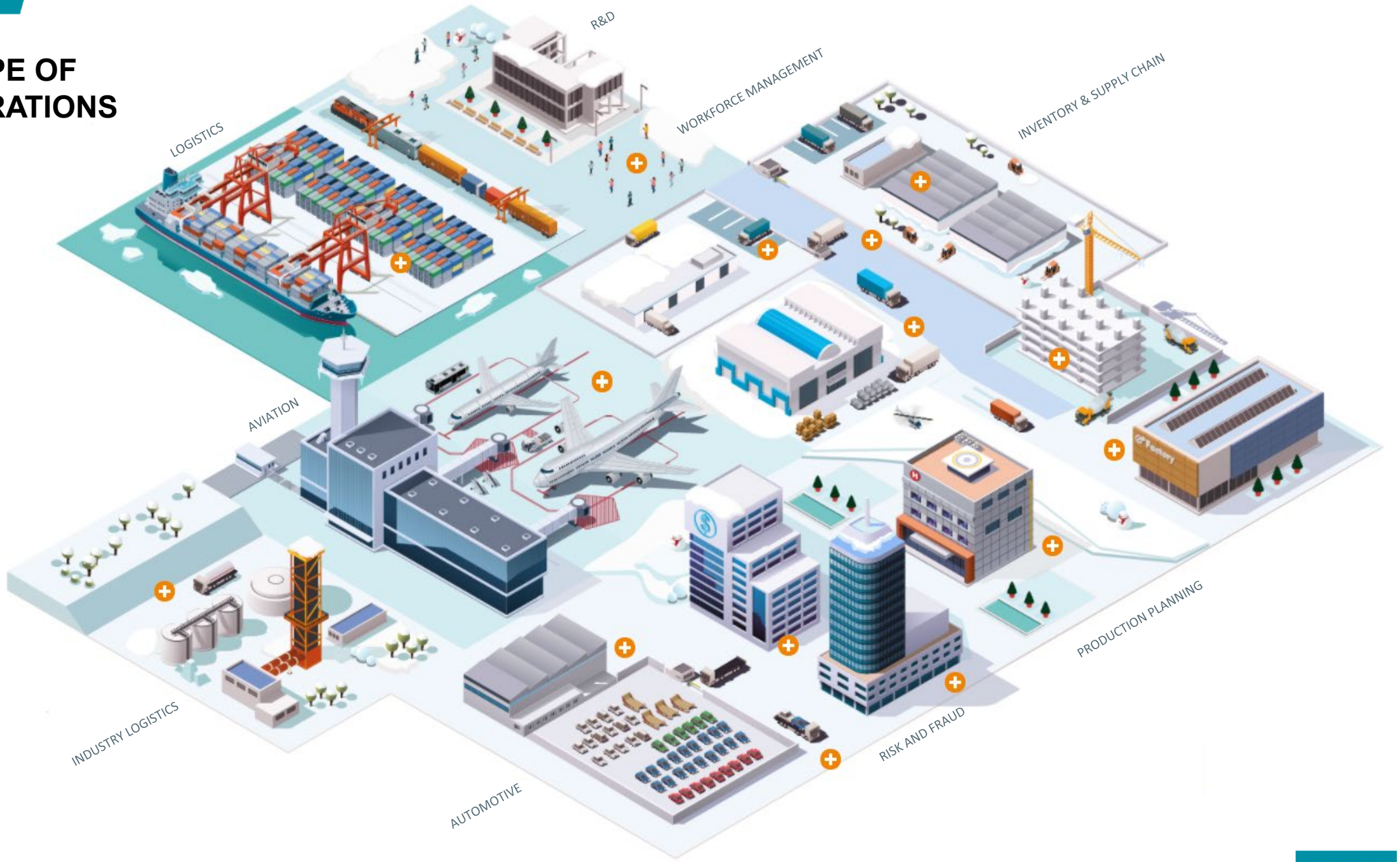
SCOPE OF OPERATIONS



Lifting Global Trade.
APM TERMINALS

TraPac

GLOBAL CONTAINER TERMINALS CANADA

HHLA

Port of Rotterdam

samskip

KTL Kombi-Terminal Ludwigshafen

CONTARGO® trimodal network

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GENERAL ARTIFICIAL INTELLIGENCE

Building systems that can mimic all aspects of human intelligence.

Example: Chatbots
(Siri, Alexa, Cortana)

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GENERAL ARTIFICIAL INTELLIGENCE

Building systems that can mimic all aspects of human intelligence

Example: Chatbots (Siri, Alexa, Cortana)

MACHINE LEARNING (ML)

Using algorithms to iteratively learn from and adapt to data.

Understanding the past.

Example: Email spam filter; chess computer

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GENERAL ARTIFICIAL INTELLIGENCE

Building systems that can mimic all aspects of human intelligence.

Example: Chatbots (Siri, Alexa, Cortana)

MACHINE LEARNING (ML)

Using algorithms to iteratively learn from and adapt to data.

Understanding the past.

Example: Email spam filter; chess computer

OPERATIONS RESEARCH (OR)

Using analytical methods and algorithms to optimize business processes.

Anticipating the future.

Example: Real-time Train Load Optimization

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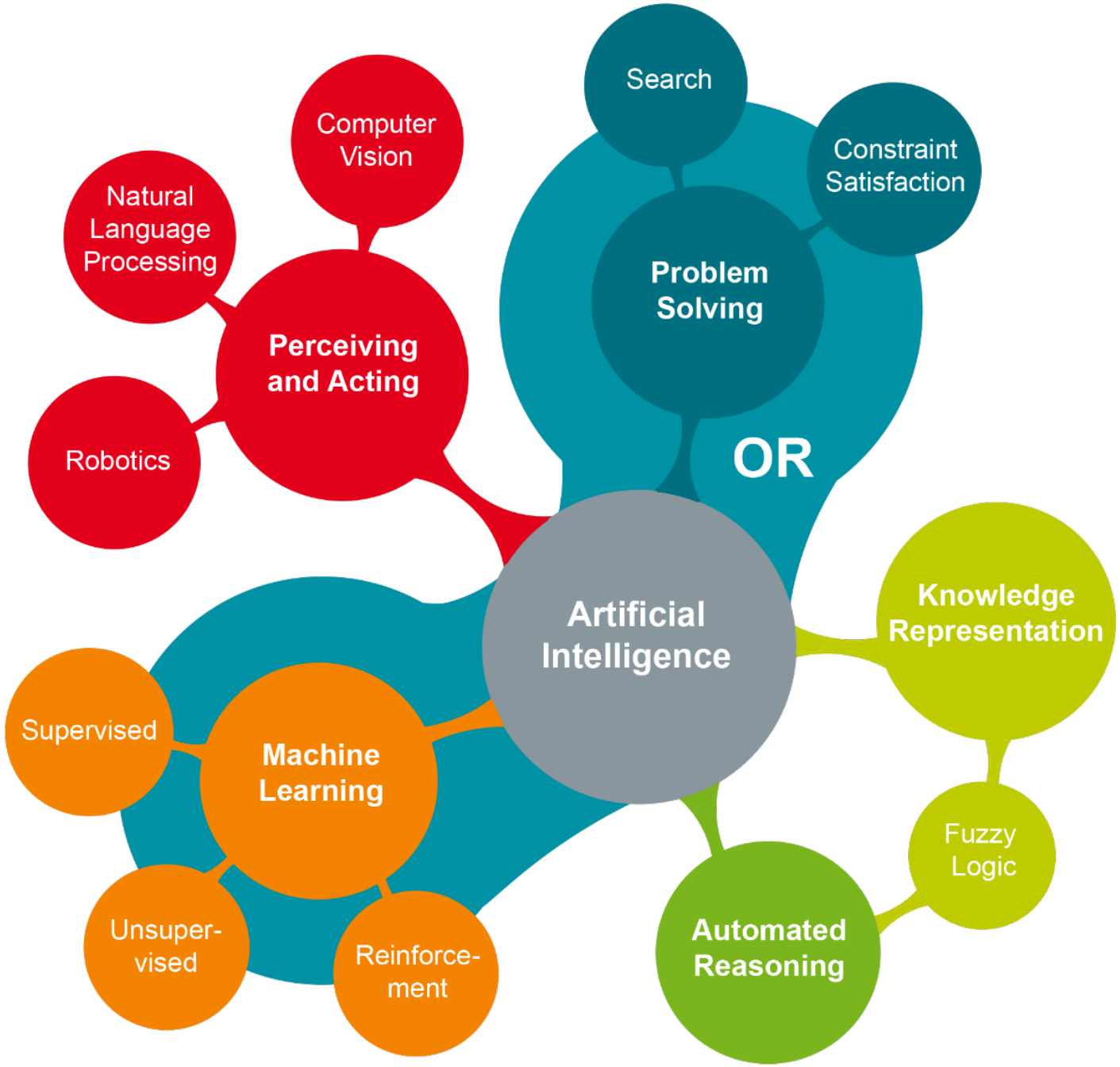
WHAT IS
ARTIFICIAL INTELLIGENCE

WHAT IS **AI**

WHAT IS **AI**

WHAT IS **AI**



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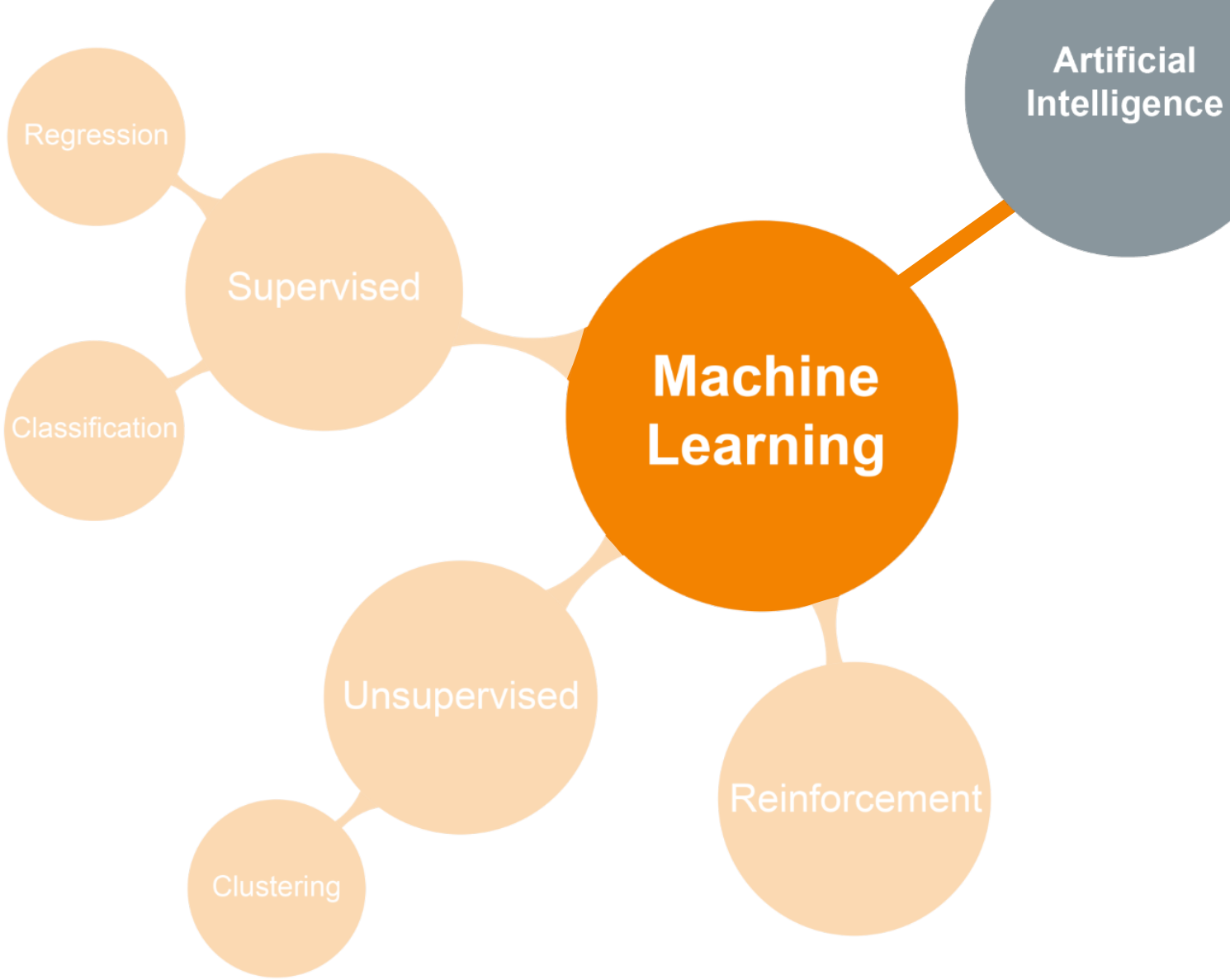
WHAT IS
MACHINE LEARNING (ML)

WHAT IS **ML**



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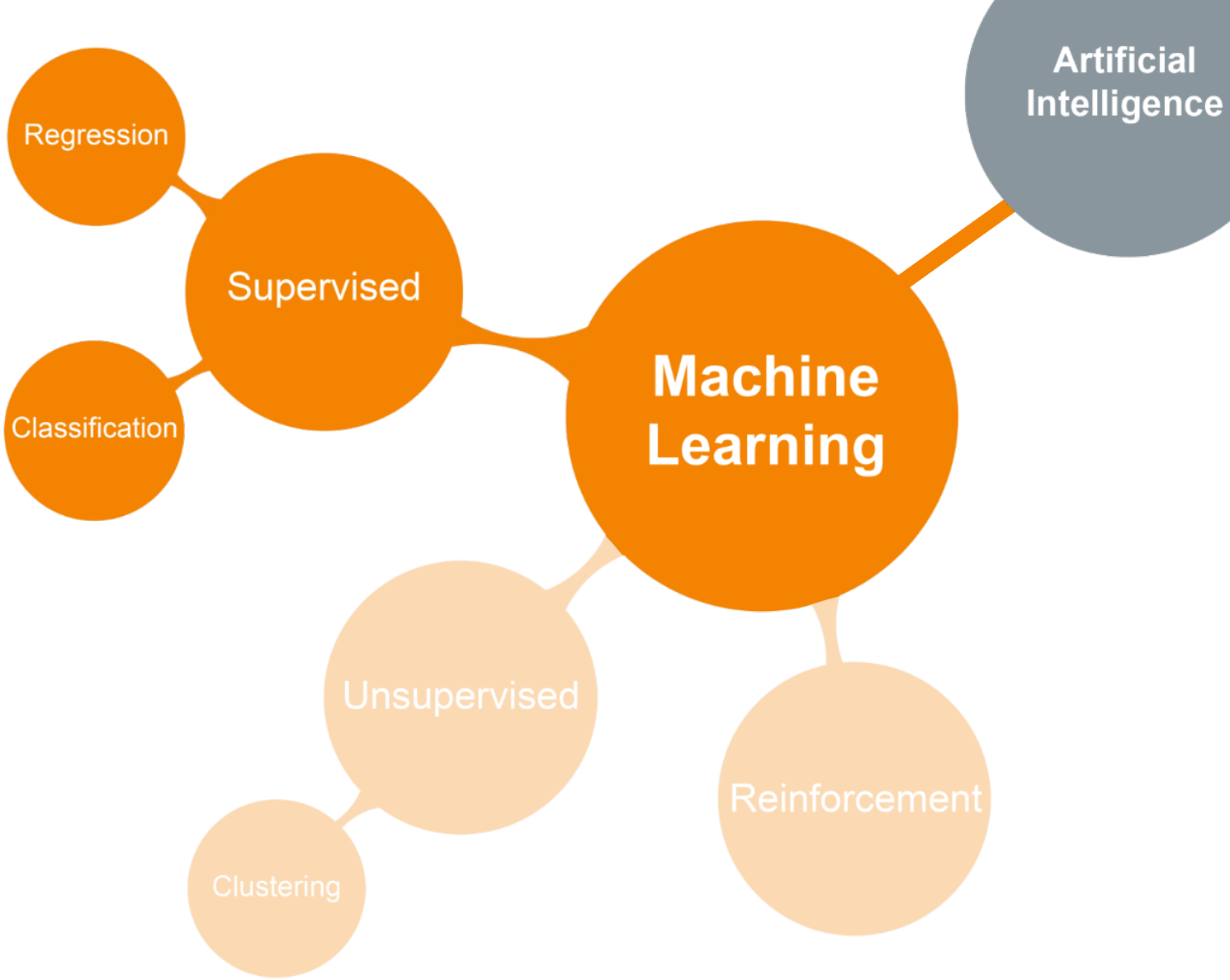
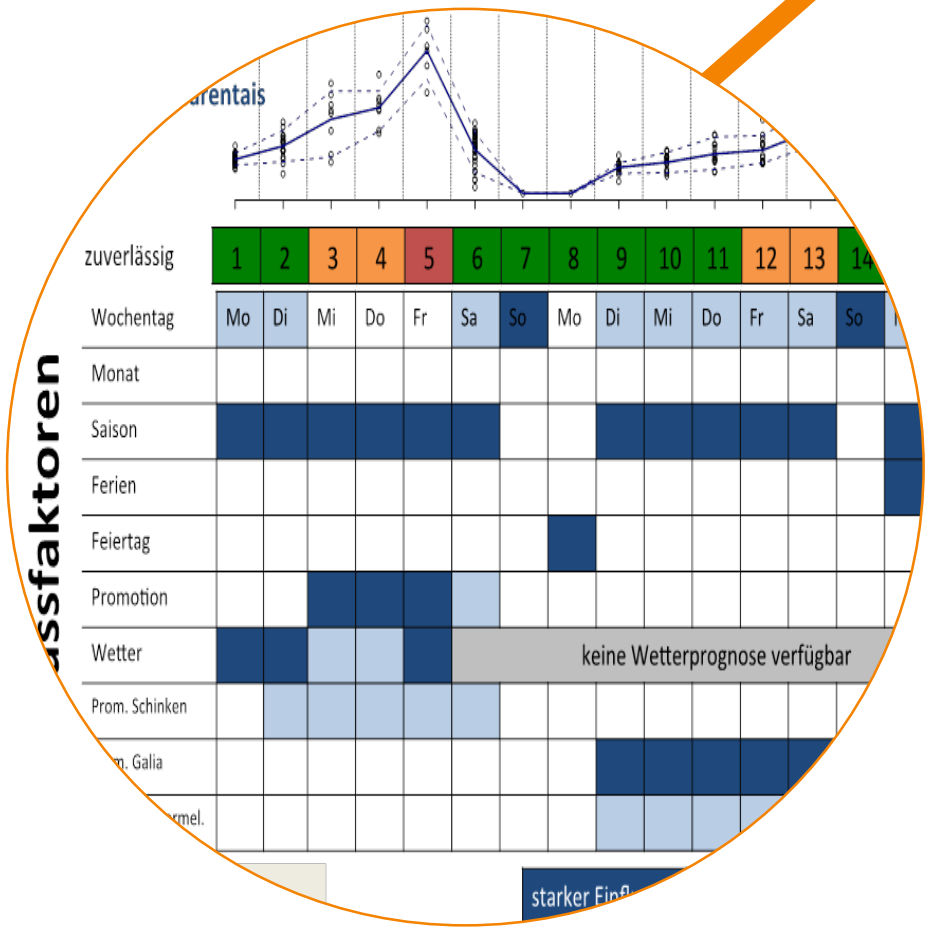
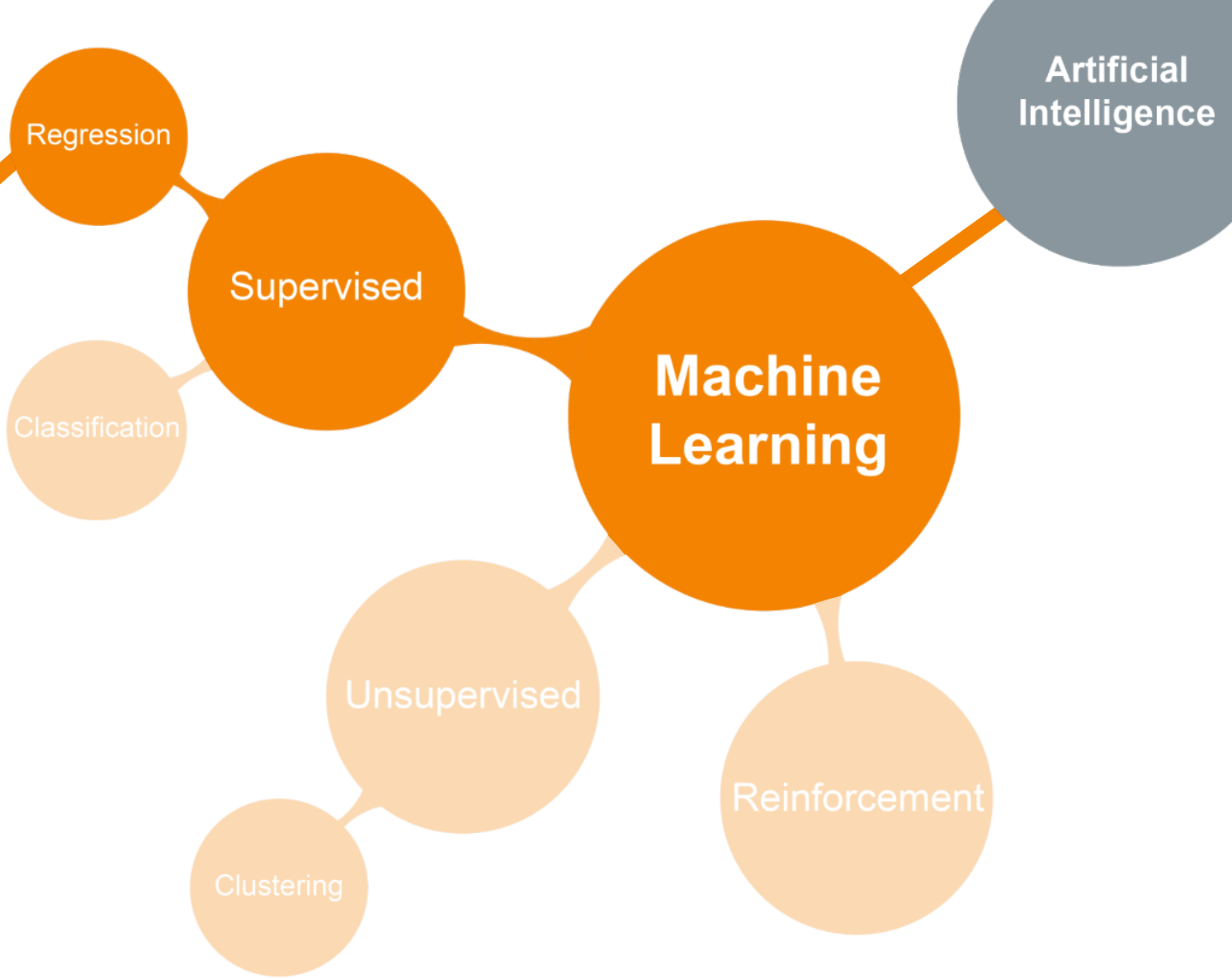
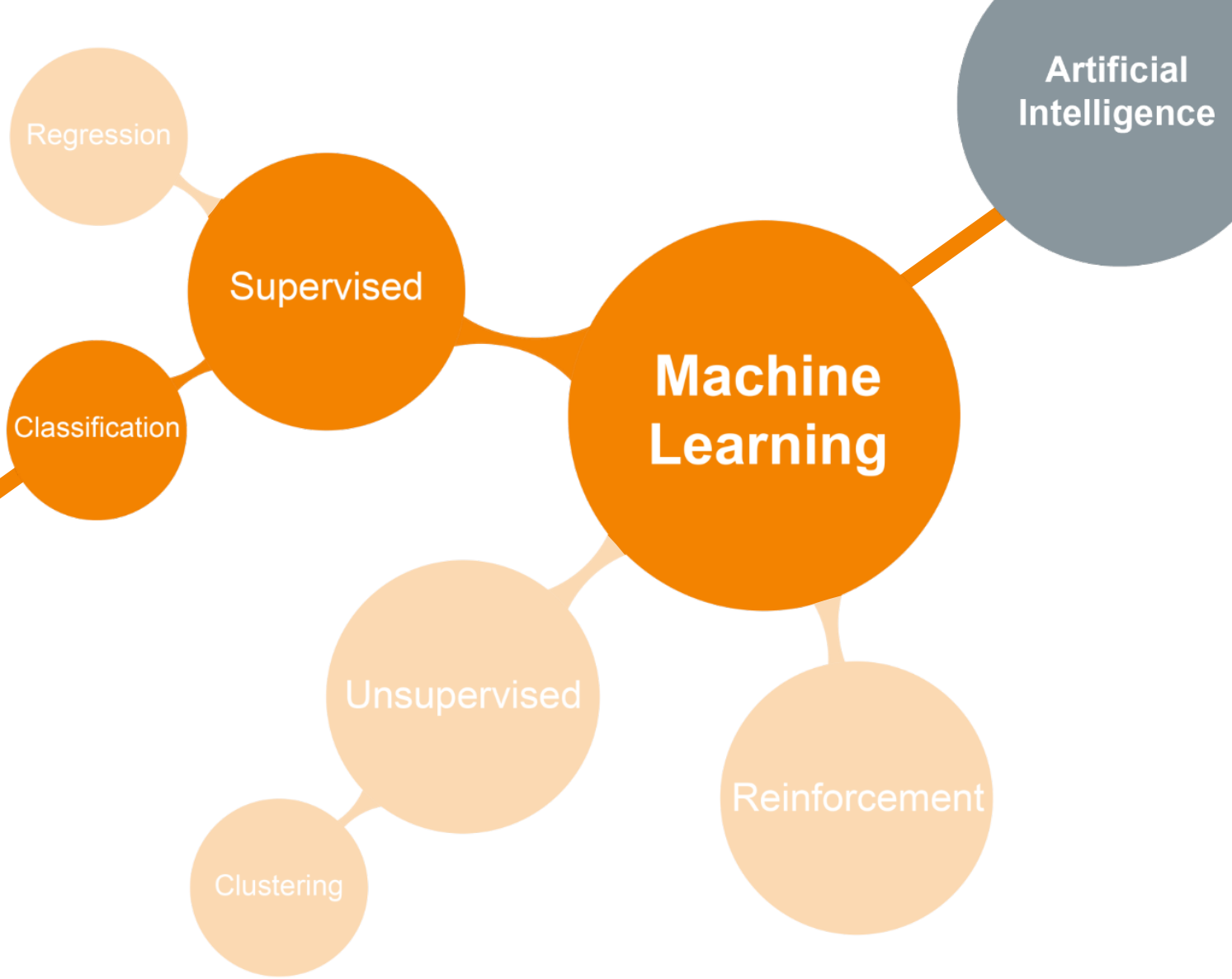


WHAT IS **ML**
Umbrella or BBQ?





WHAT IS **ML**
Dog or Muffin?



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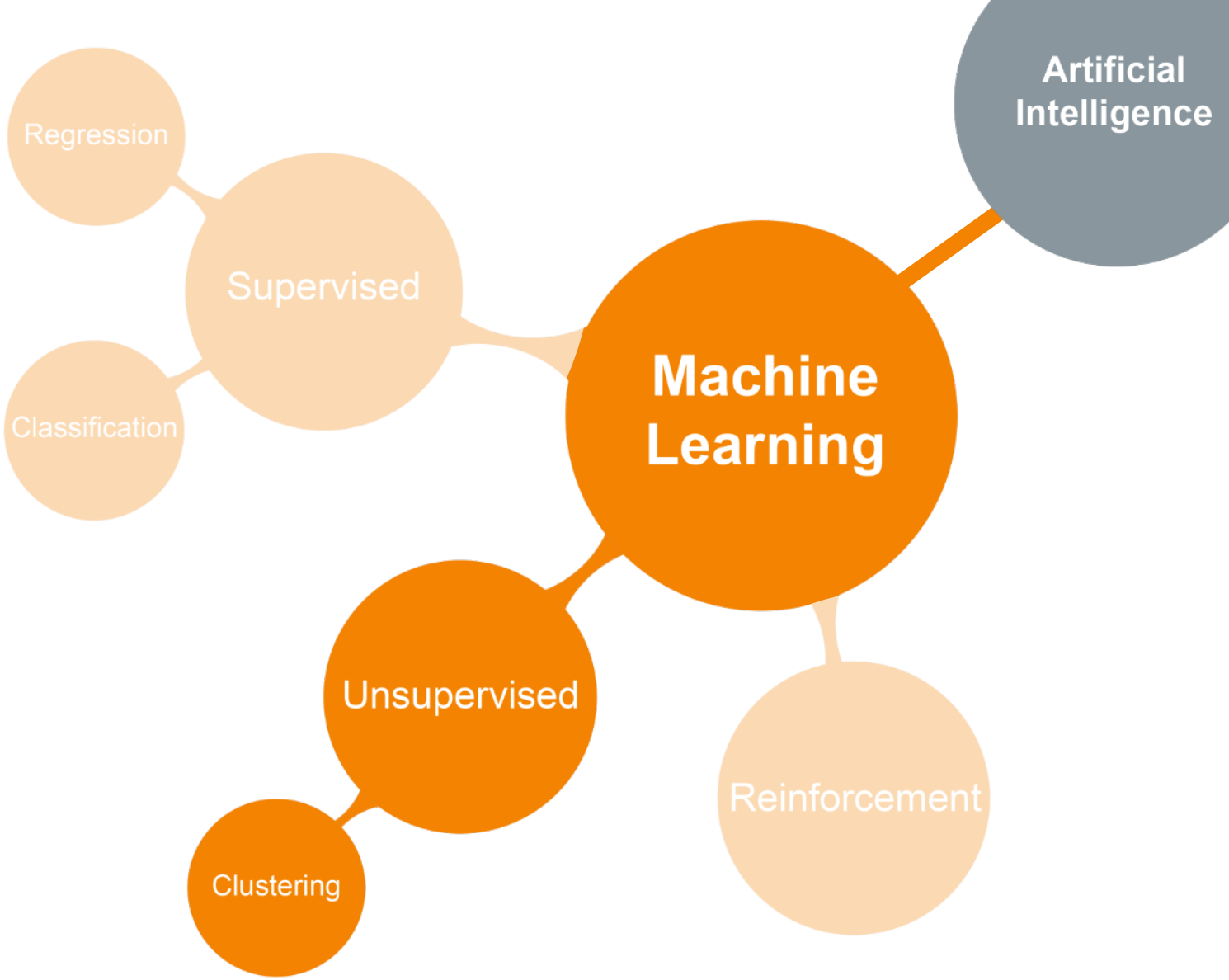

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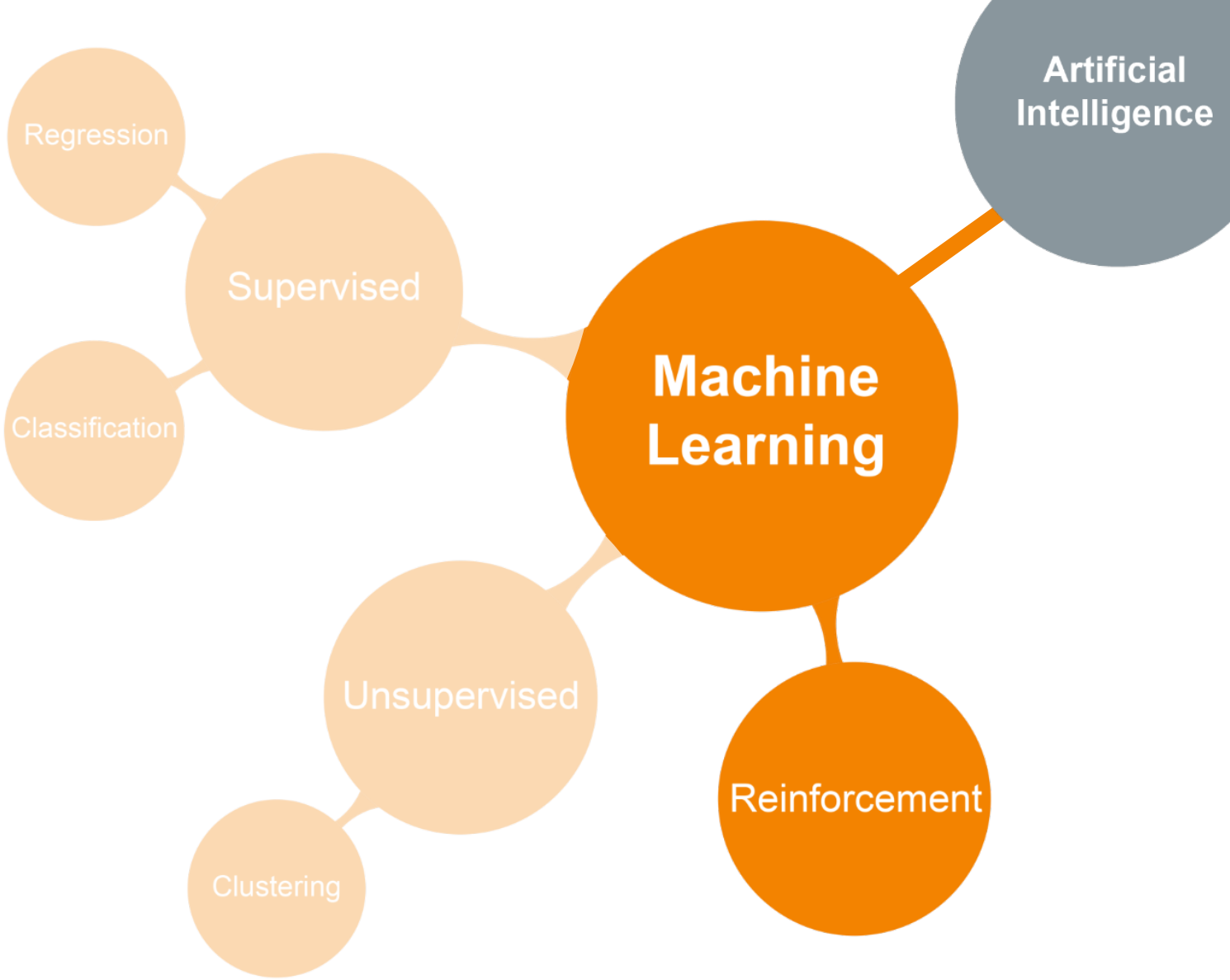

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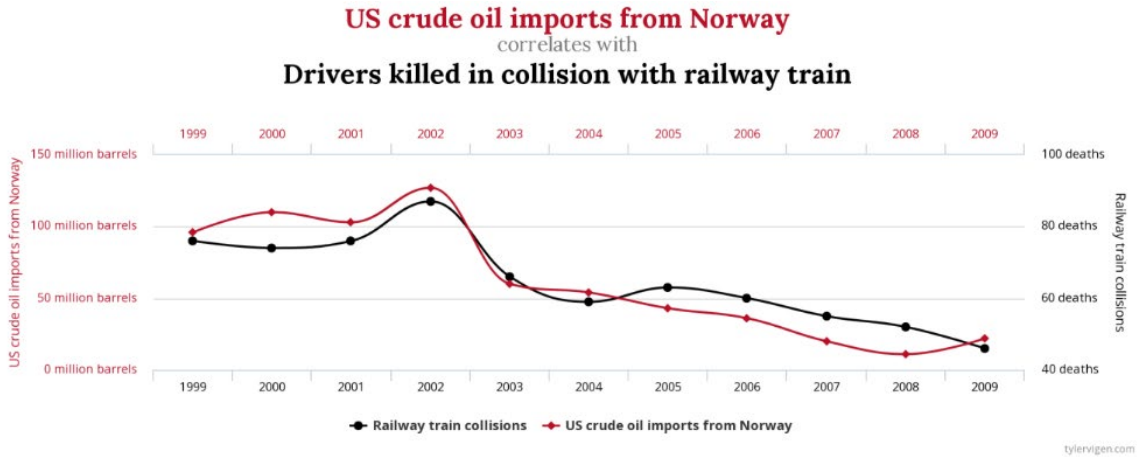

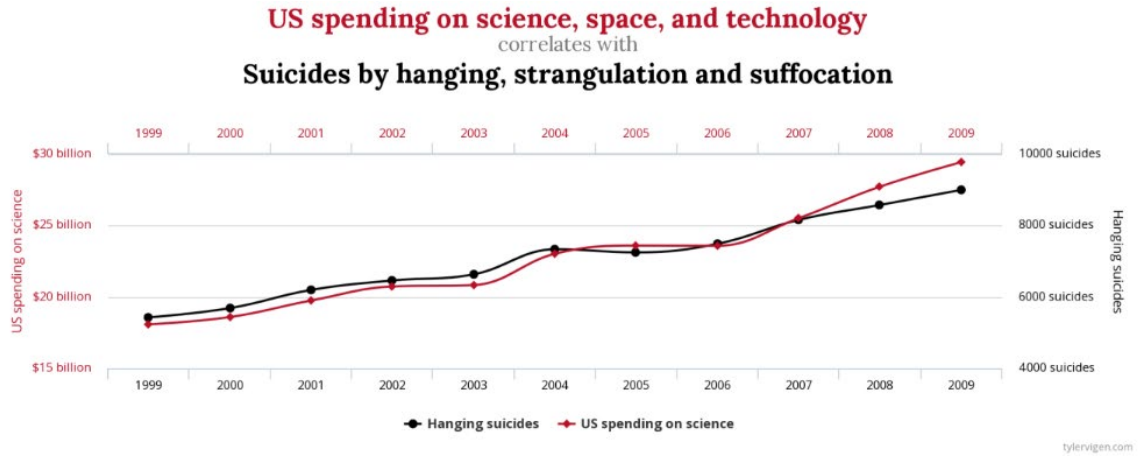

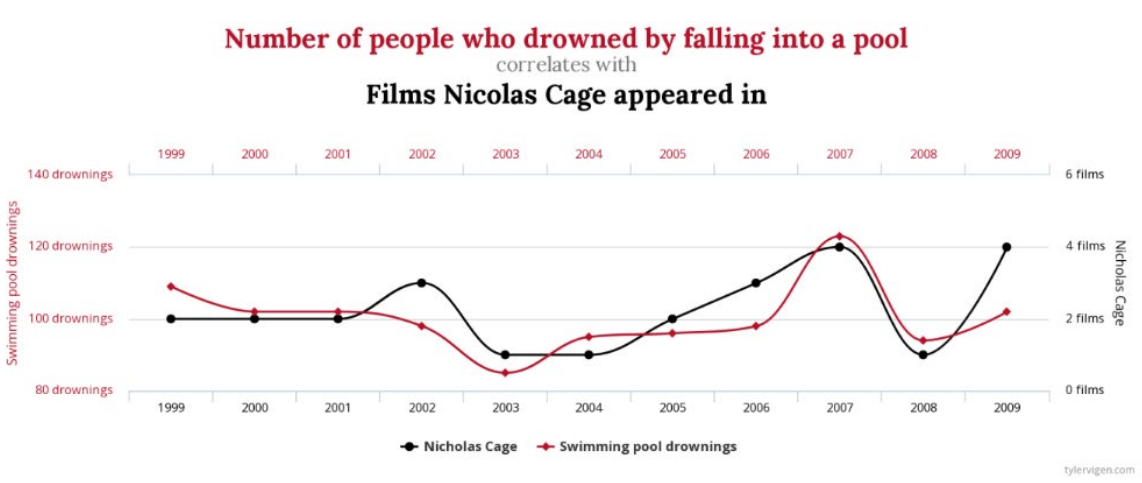

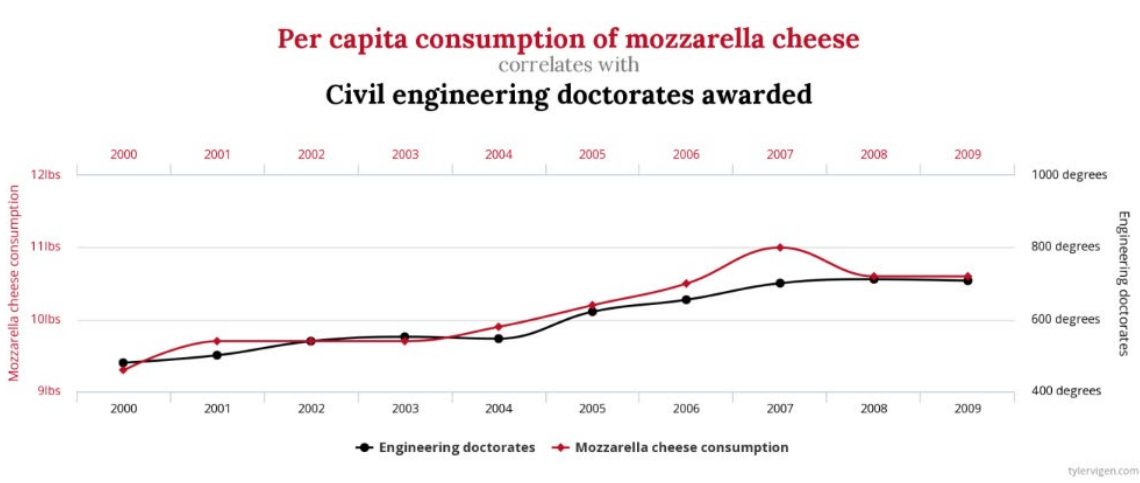

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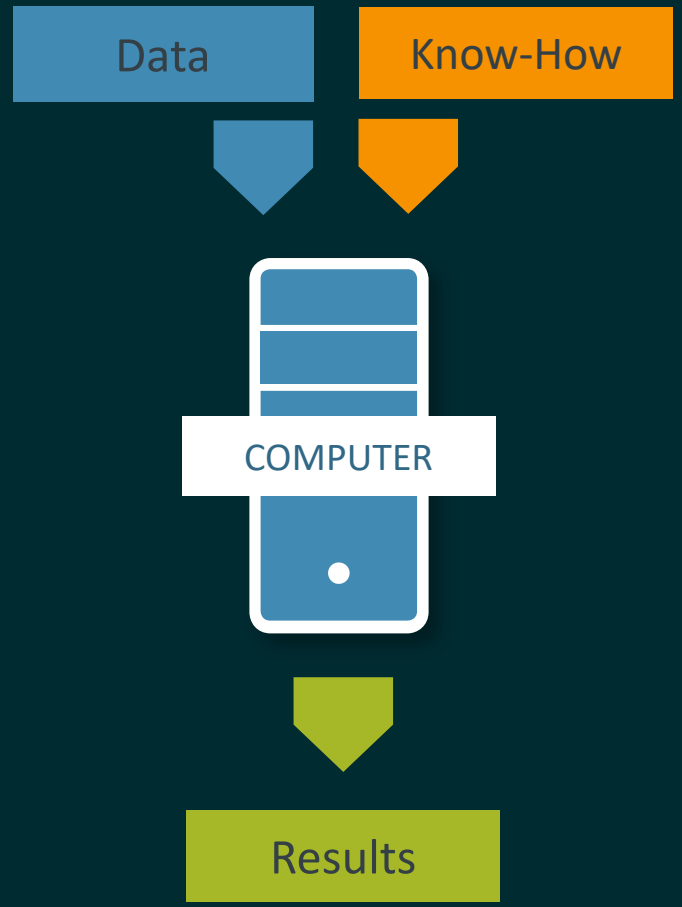
TRADITIONAL
PROGRAMMING



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MACHINE LEARNING

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MACHINE LEARNING
TYPICAL PROJECT

	Milestone	Time
	State the problem as a ML task	~10%
Results	Data collection	~80%
Data	Data cleaning	
ML Skills	Feature engineering	
	Modelling and evaluations	~5%
	Predictions	
	Measure the impact	~5%
	Know-How	

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PREDICT
FILM SUCCESS
WITH ML

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Milestone

State the problem as a ML task	Predict a film's success (revenue and rating)
Data collection	Excellent data from TMDB on film, including: actors, language, duration, country, genre, budget, revenue, rating
Data cleaning	
Feature engineering	
Modelling and evaluations	
Predictions	
Measure the impact	
Know-How	

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Feature engineering

Converting data points	→	Into numbers
Budget	→	€20,000,000.00
Revenue	→	€300,000,000.00
Rating	→	7.6 / 10.0
Actors, language, genre	→	? – No clear numbers

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Feature engineering

Converting data points	→	Into numbers
Actors, language, genre	→	? – No clear numbers
Actors	→	e.g. Score or Net Worth

Formula to determine an actor's "Score"

$$\sum_{All\ films\ of\ the\ actor} \#Votes * Avg.Film\ Rating$$

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Feature engineering

Converting data points

Into numbers

Actors

$$\sum_{All\ films\ of\ the\ actor} \#Votes * Avg.Film\ Rating$$

Actor Name	Actor Score
Leonardo Di Caprio	1060292.4
Tom Hanks	972055.3
Robert Downey Jr.	939755.5
Samuel L. Jackson	939506.0
Scarlett Johansson	926052.5

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Milestone

State the problem as a ML task	Predict a film's success (revenue and rating)
Data collection	Excellent data from TMDB on film, including: actors, language, duration, country, genre, budget, revenue, rating
Data cleaning	
Feature engineering	Quantifying all data
Modelling and evaluations	Determining a suitable prediction model (Regression)
Predictions	Split data into training and testing sets
Measure the impact	MAE: Revenue ~ $ 19M Rating: ~ 0.59

Know-How

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Know-How

Revenue		Rating
Top/Flop quantification		Small MAE, RMSE
Impacted most by • Budget • 4th actor		Impacted most by • Runtime • 4th actor

PREDICT
FILM SUCCESS
WITH ML

Data

Results

COMPUTER

Know-How

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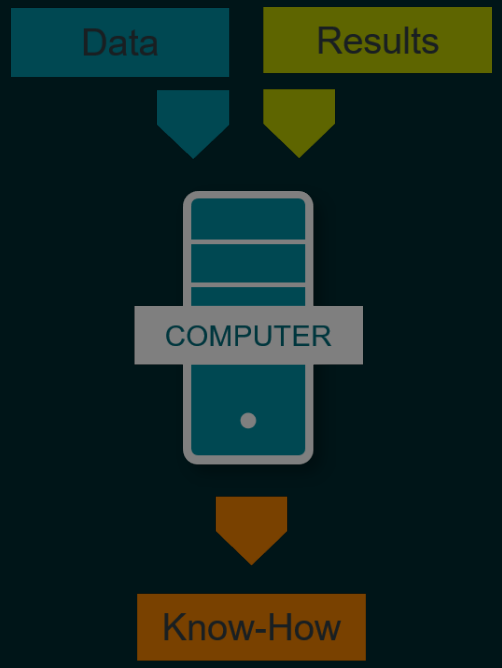
PREDICT
FILM SUCCESS
WITH ML



Release date / / **Nov 22**
Genre / / Crime
Language / / English
Countries / / US
Runtime / / 90 minutes
Budget / / $80,000,000

Cast

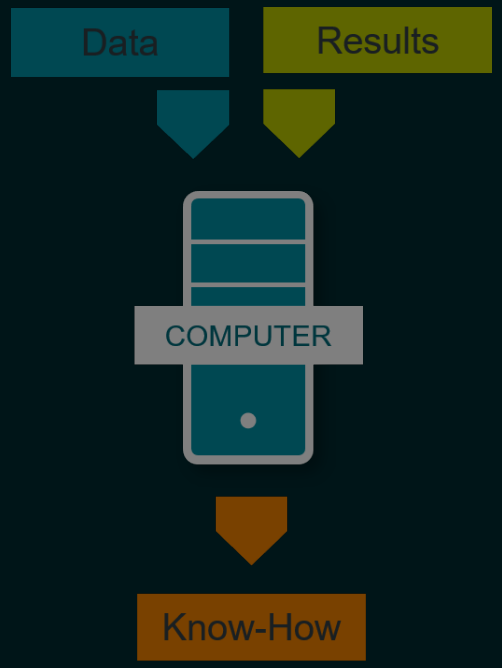
Douglas / / Benedict Cumberbatch
Emma / / Kangana Ranaut
Griselle / / Meryl Streep
Greg / / Bryan Cranston
Athena / / Emily Blunt (4th Actor)

Prediction

Revenue / / $124,865,328
Profit/Loss // **$44,865,328**

Rating / / 5.53 / 10.0

PREDICT
FILM SUCCESS
WITH ML



Release date / / **Nov 22**
Genre / / Crime
Language / / English
Countries / / US
Runtime / / 90 minutes
Budget / / $100,000,000

Cast

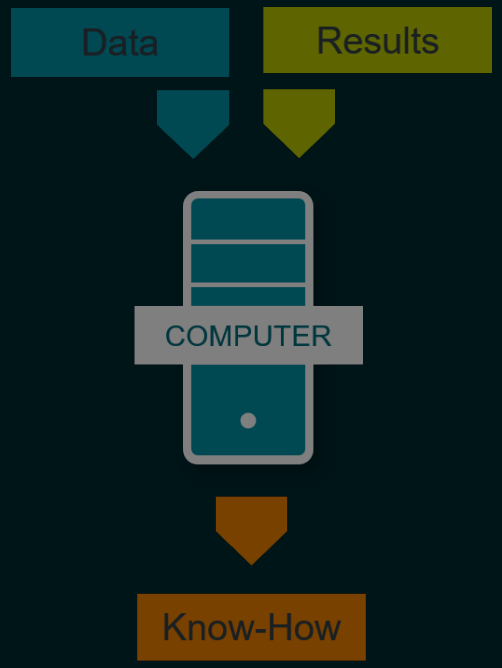
Douglas / / Benedict Cumberbatch
Emma / / Kangana Ranaut
Griselle / / Meryl Streep
Greg / / Bryan Cranston
Athena / / Emily Blunt (4th Actor)

Prediction

Revenue / / $ 177,114,944
Profit/Loss // **$77,114,944**

Rating / / 5.54 / 10.0

PREDICT
FILM SUCCESS
WITH ML



Release date / / **Nov 22**
Genre / / Crime
Language / / English
Countries / / US
Runtime / / 180 minutes
Budget / / $100,000,000

Cast

Douglas / / Benedict Cumberbatch
Emma / / Kangana Ranaut
Griselle / / Meryl Streep
Greg / / Bryan Cranston
Athena / / Emily Blunt (4th Actor)

Prediction

Revenue / / $ 247,791,904
Profit/Loss // **$147,791,904**

Rating / / **7.03** / 10.0

MACHINE LEARNING IN TERMINAL OPS

Capabilities

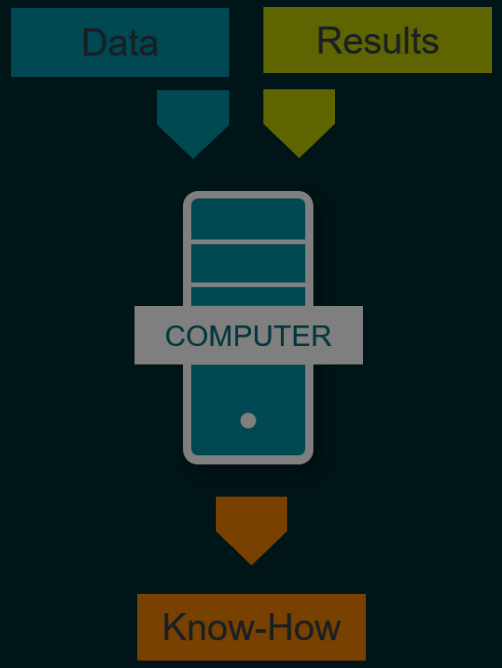
Predicting crane execution times.

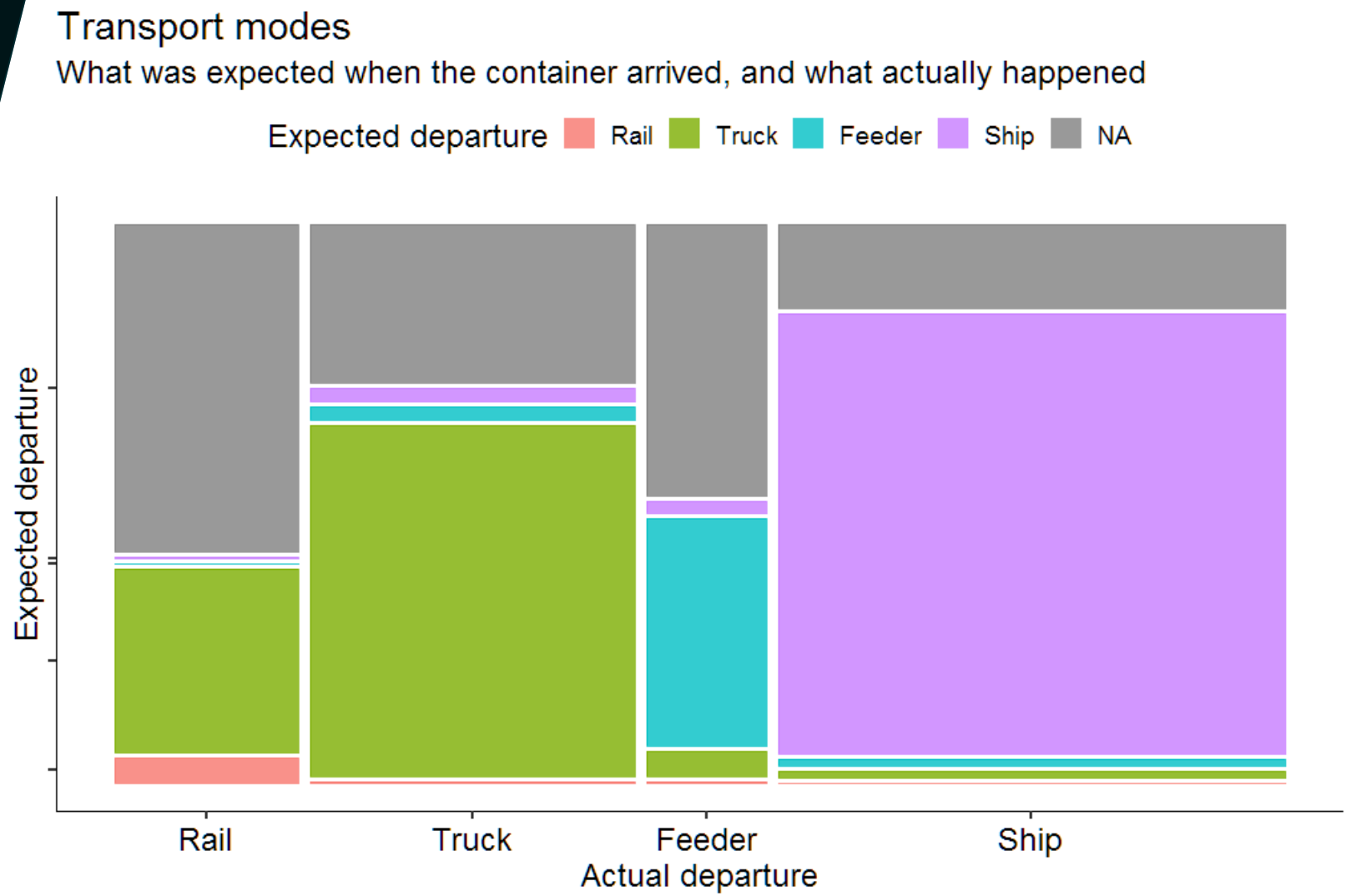
Predicting container dwell times.

Predicting outbound mode of transport.

Predicting equipment maintenance schedules.

PREDICTING
OUTBOUND MODE
OF TRANSPORT





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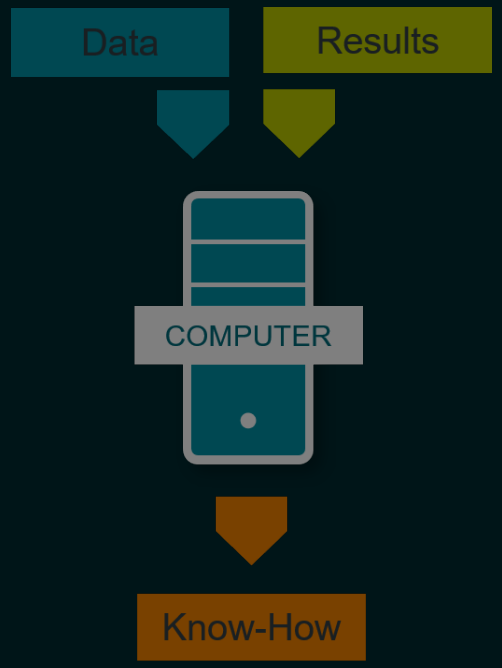
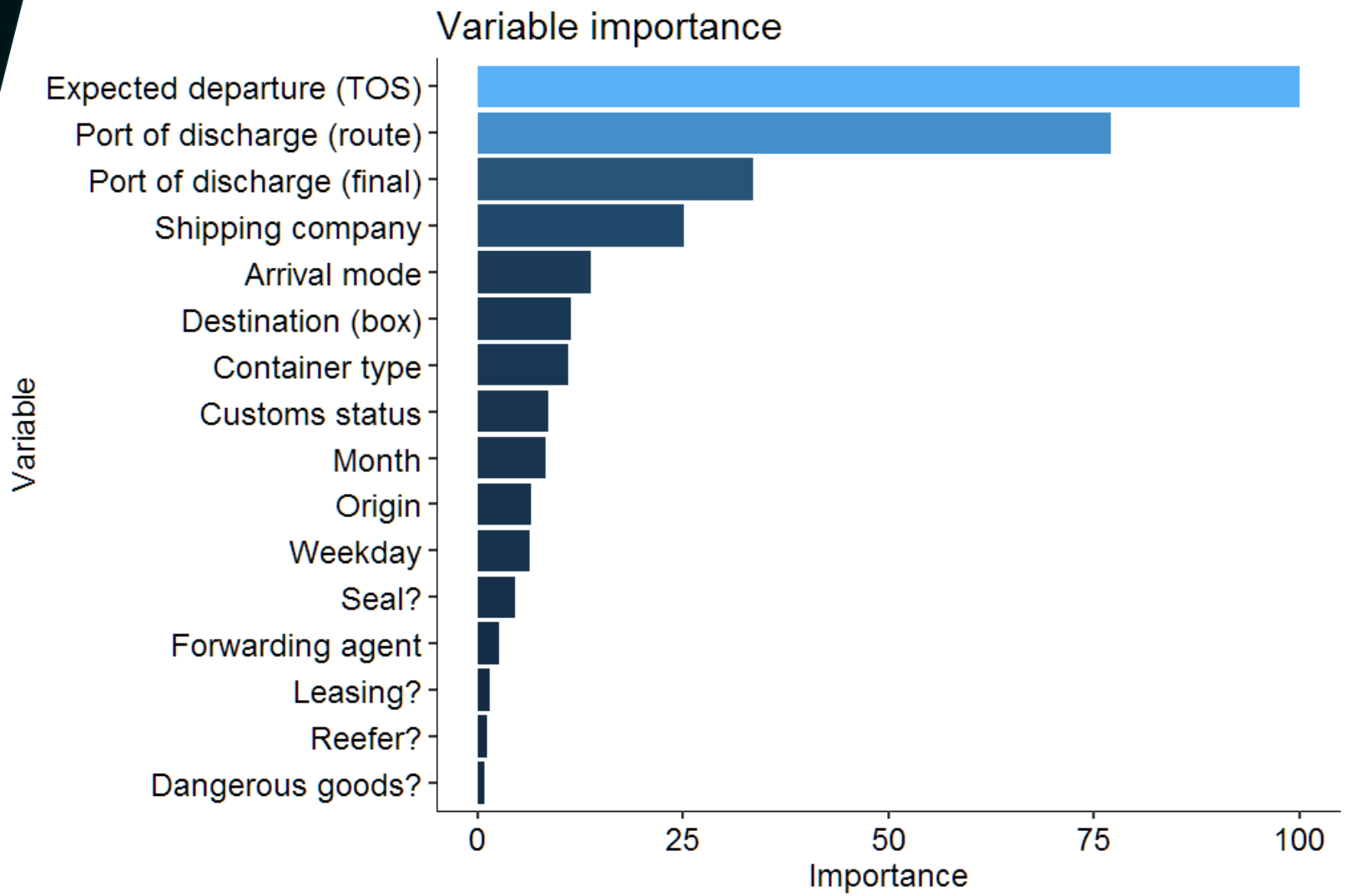
PREDICTING
OUTBOUND MODE
OF TRANSPORT





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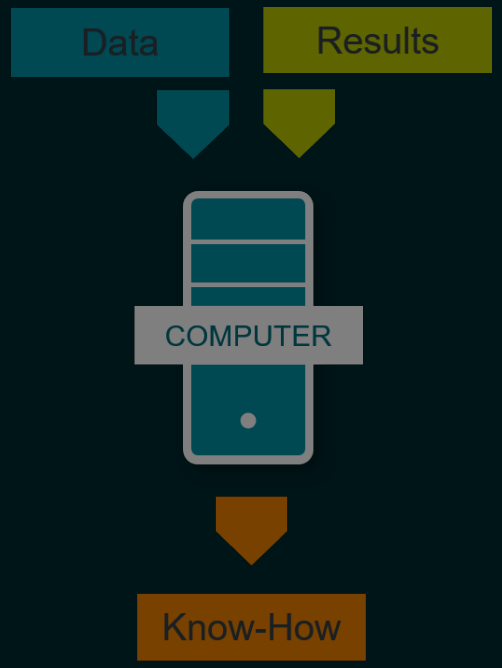

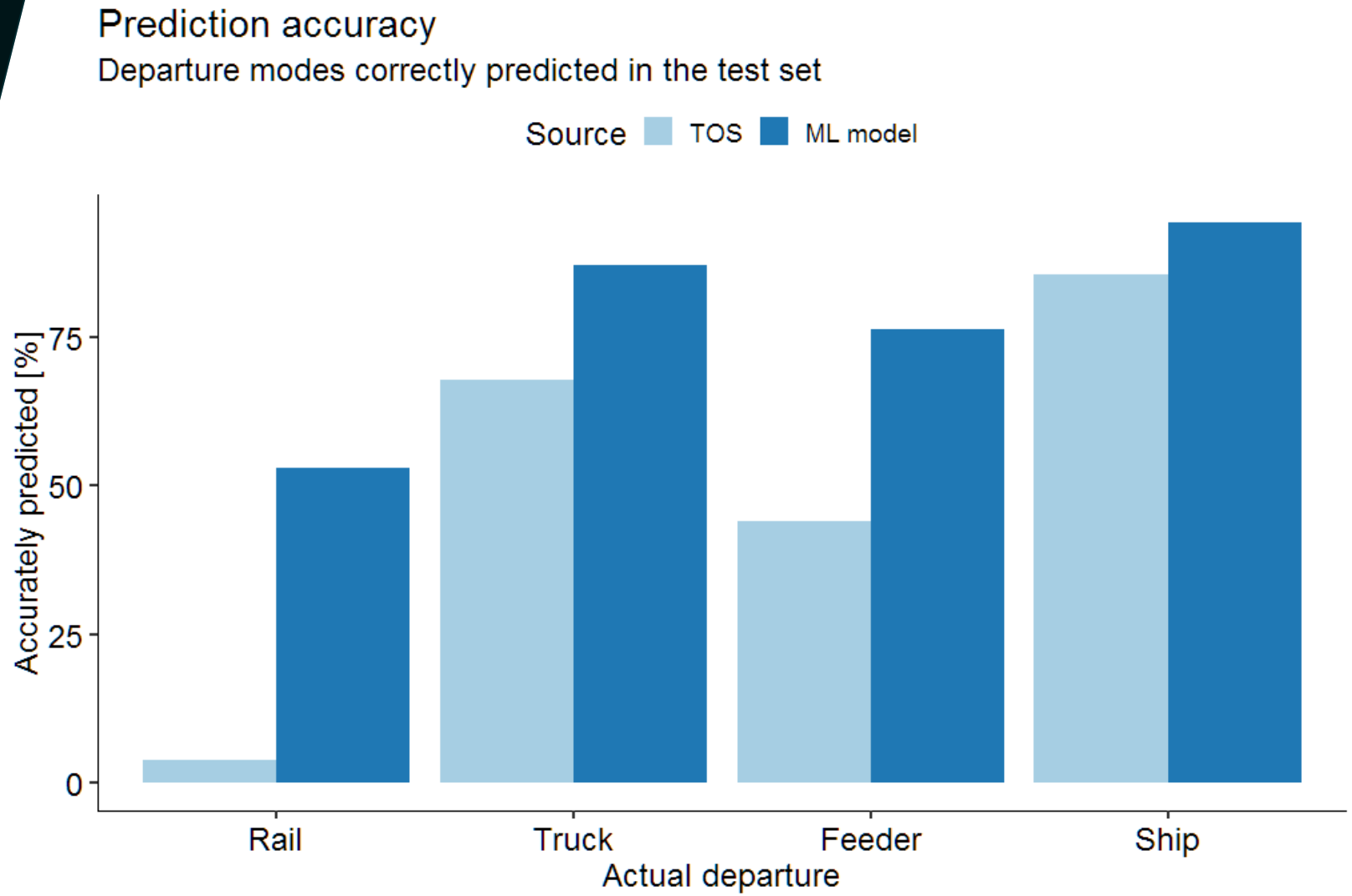

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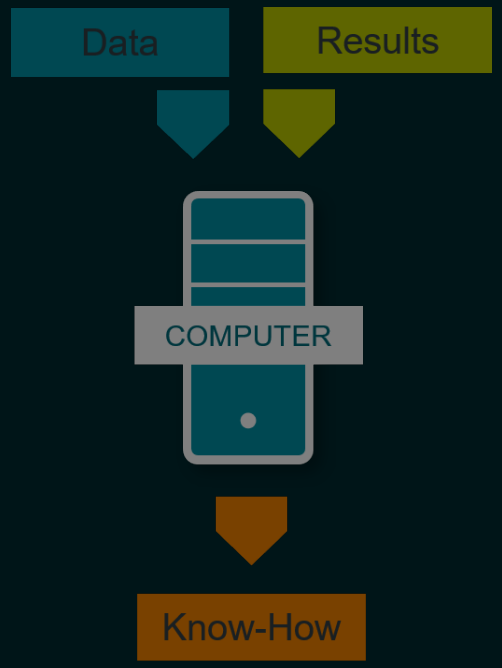
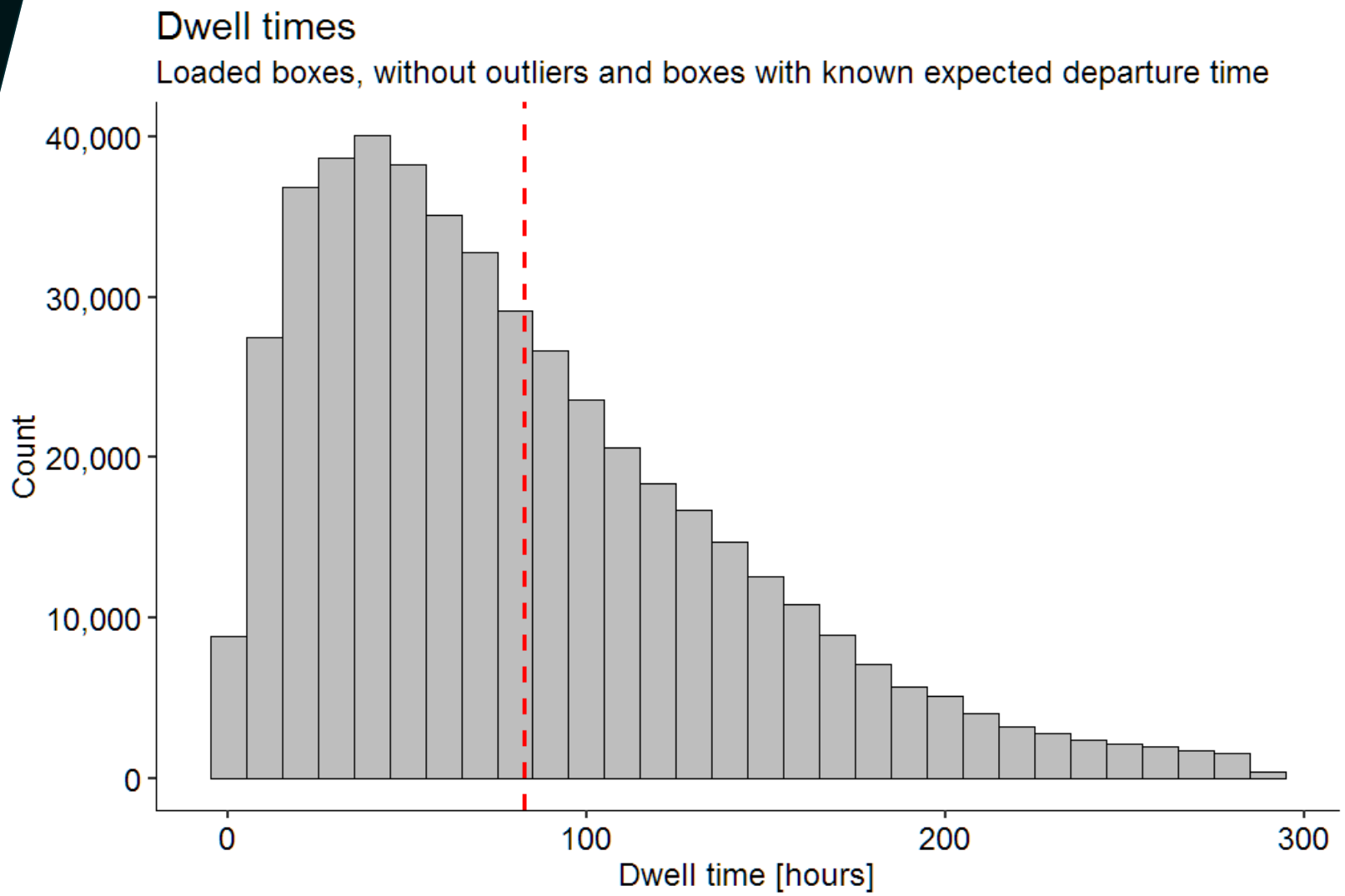
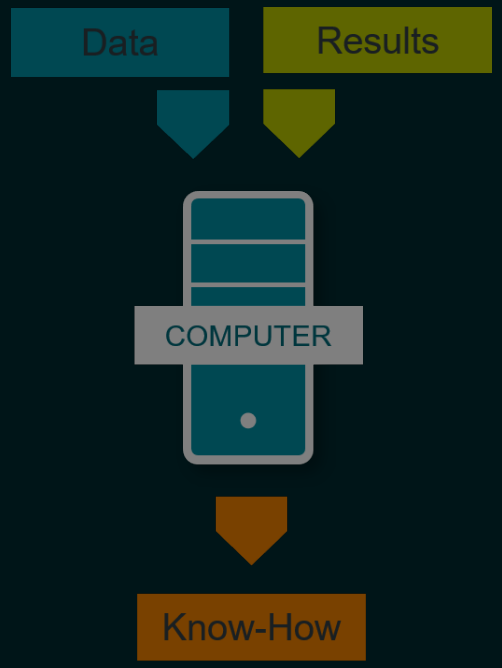
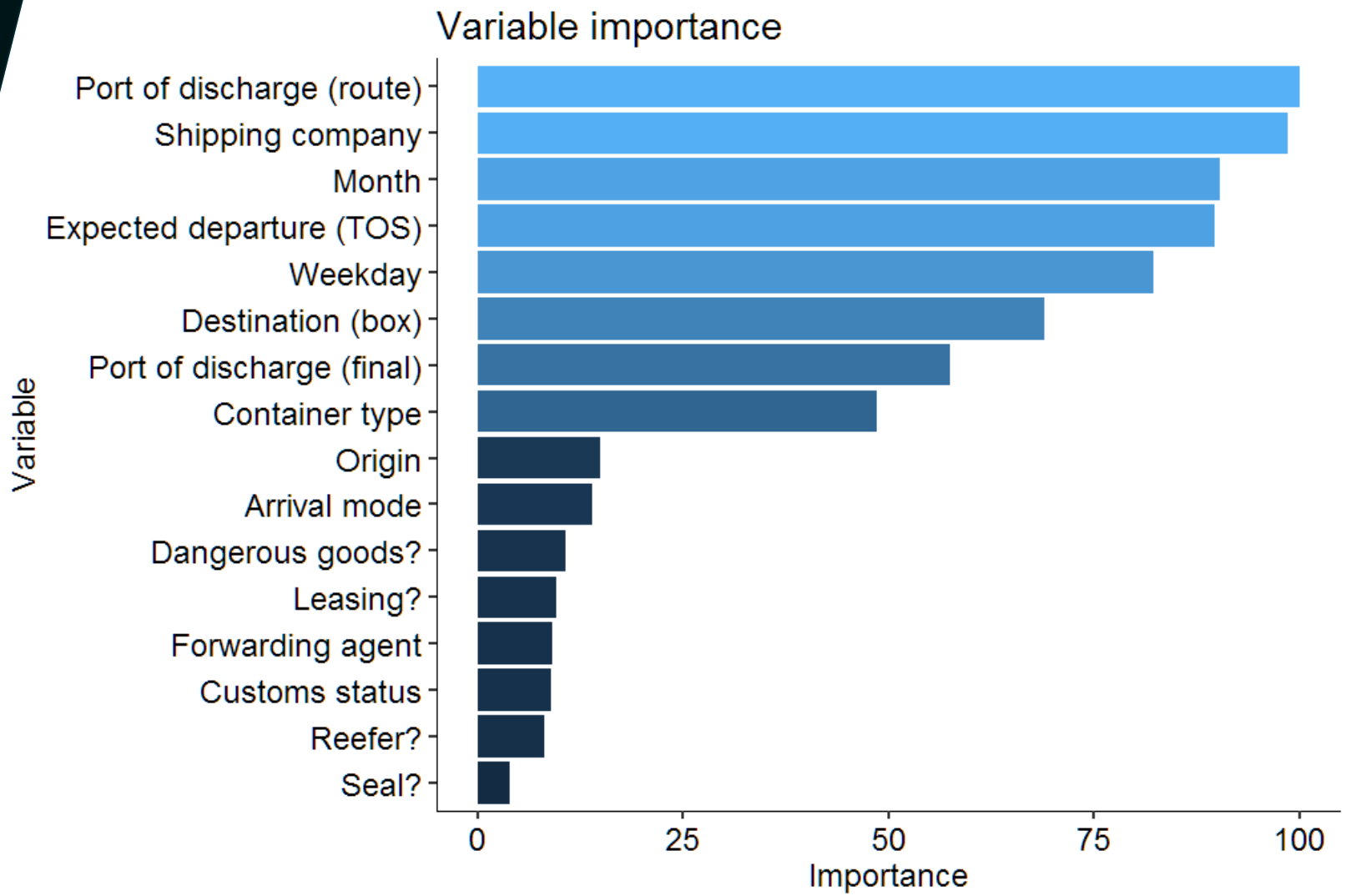
PREDICTING
CONTAINER
DWELL TIME





PREDICTING
CONTAINER
DWELL TIME





PREDICTING
CONTAINER
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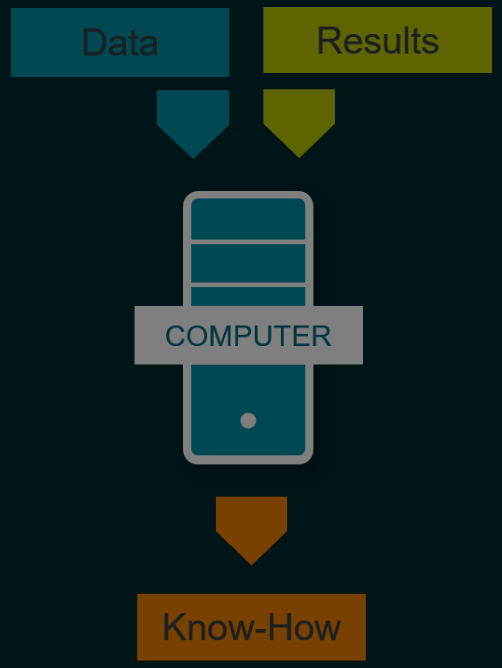
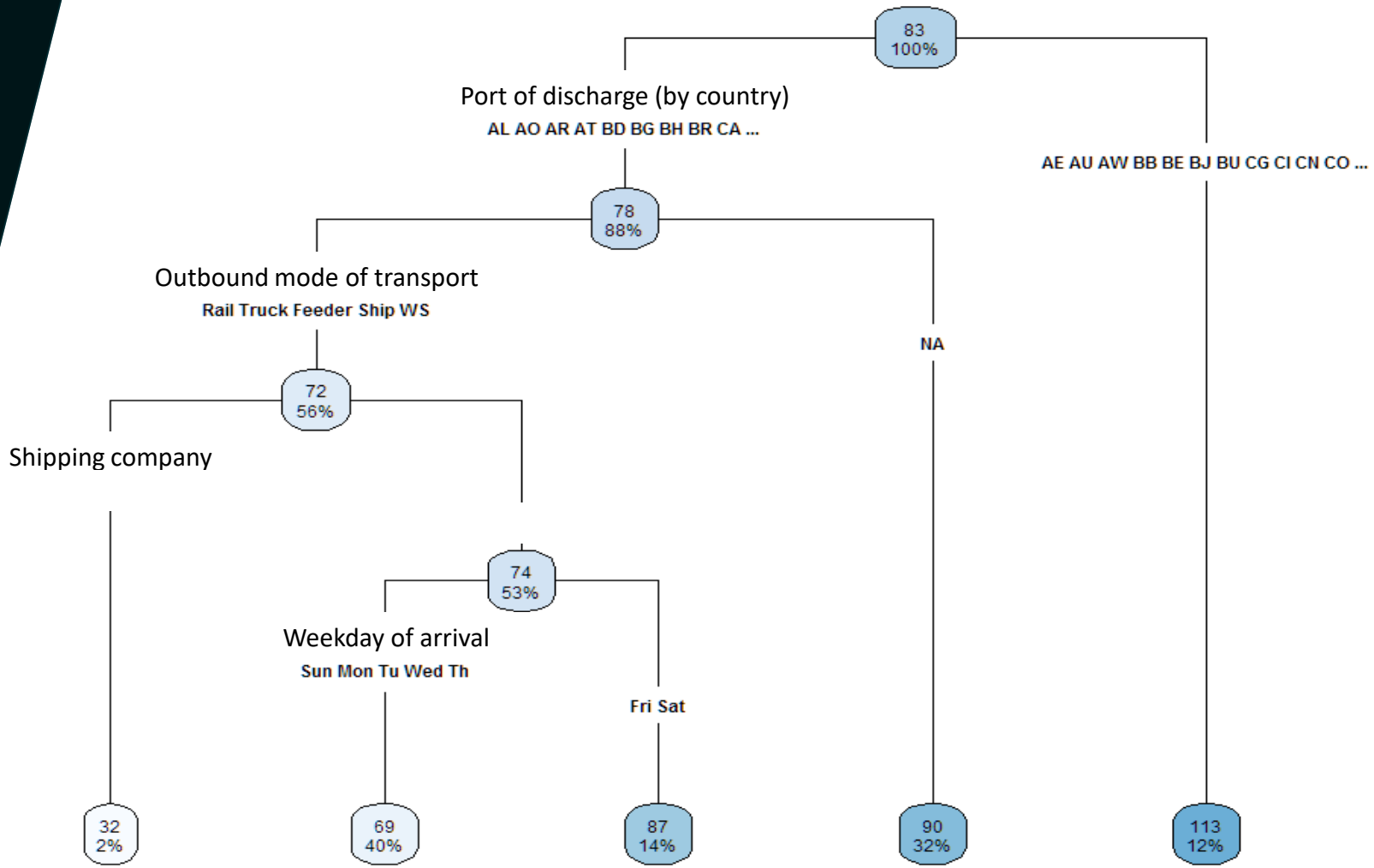
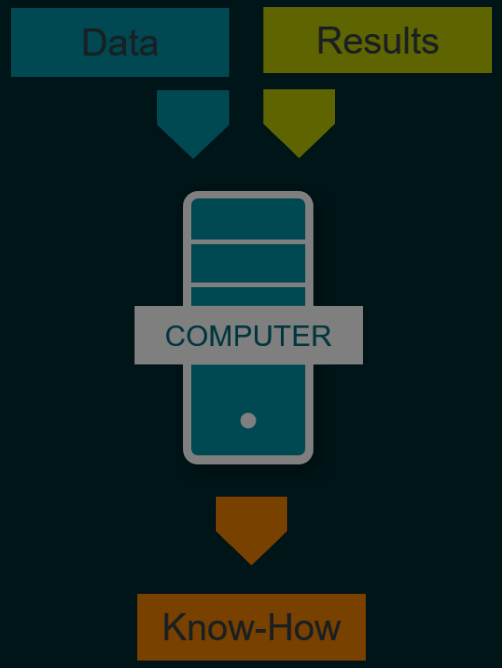
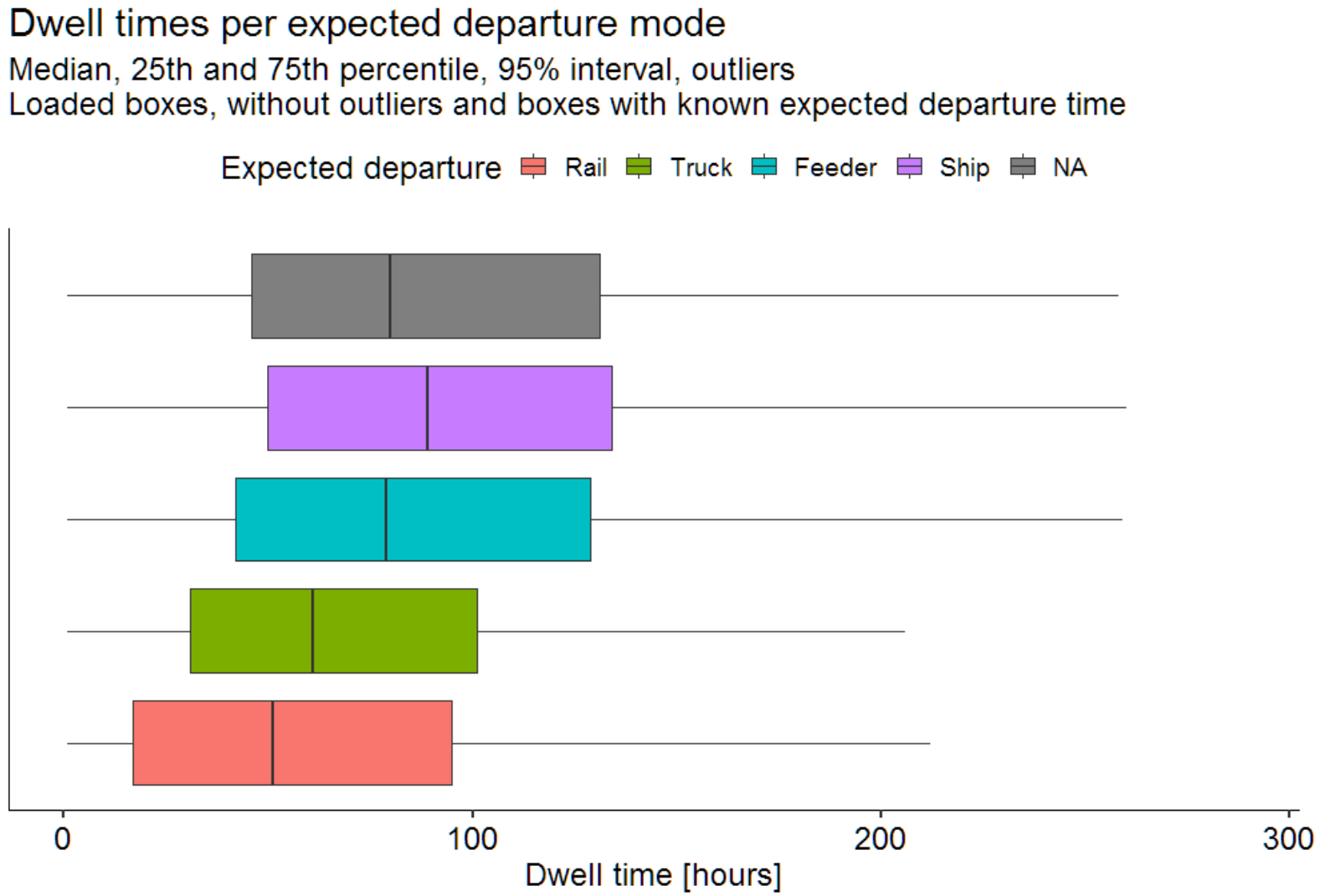




BRINGING
IT ALL
TOGETHER



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