EY GBS Leaders' Club

(narrow) AI in GBS

February 24th, 2021

Building a better working world

Agenda

- Quick poll: Data Analytics and you
- Principles of Data Analytics
- Practical Use Cases
- Dos & Don't
- Q&A

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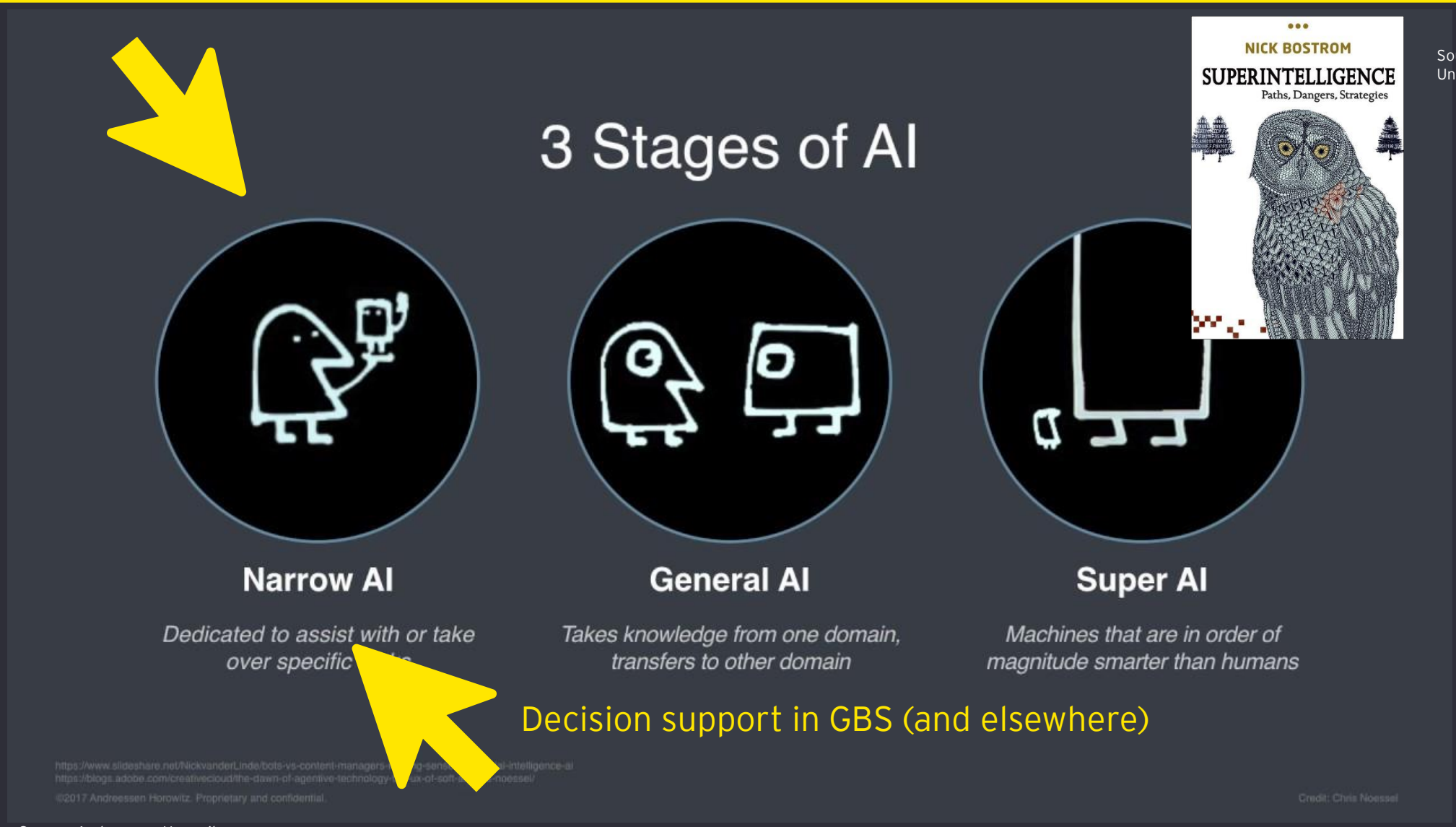
We are here and won't be in stage 2 anytime soon



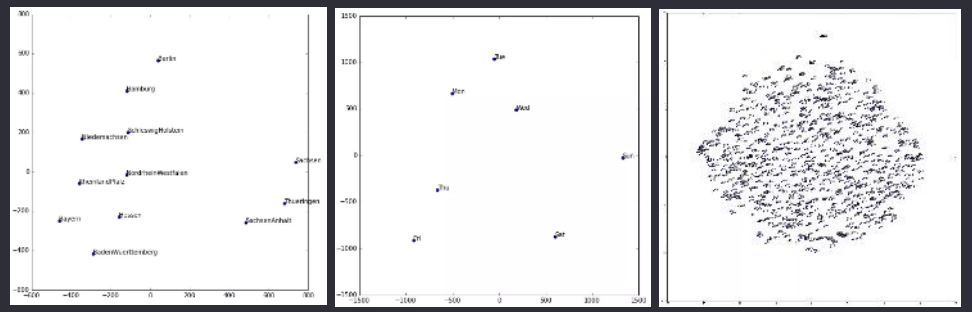
Source: Oxford University Press

Source: Andreessen Horowitz

State of Machine Learning / Artificial Intelligence in 2020

“Traditional tabular data”

Entity Embeddings from deep learning



Source: fast.ai

Natural Language Processing

Google Assistant calling a restaurant for a reservation

Graph based ML

Reinforcement Learning

Source: DeepMind

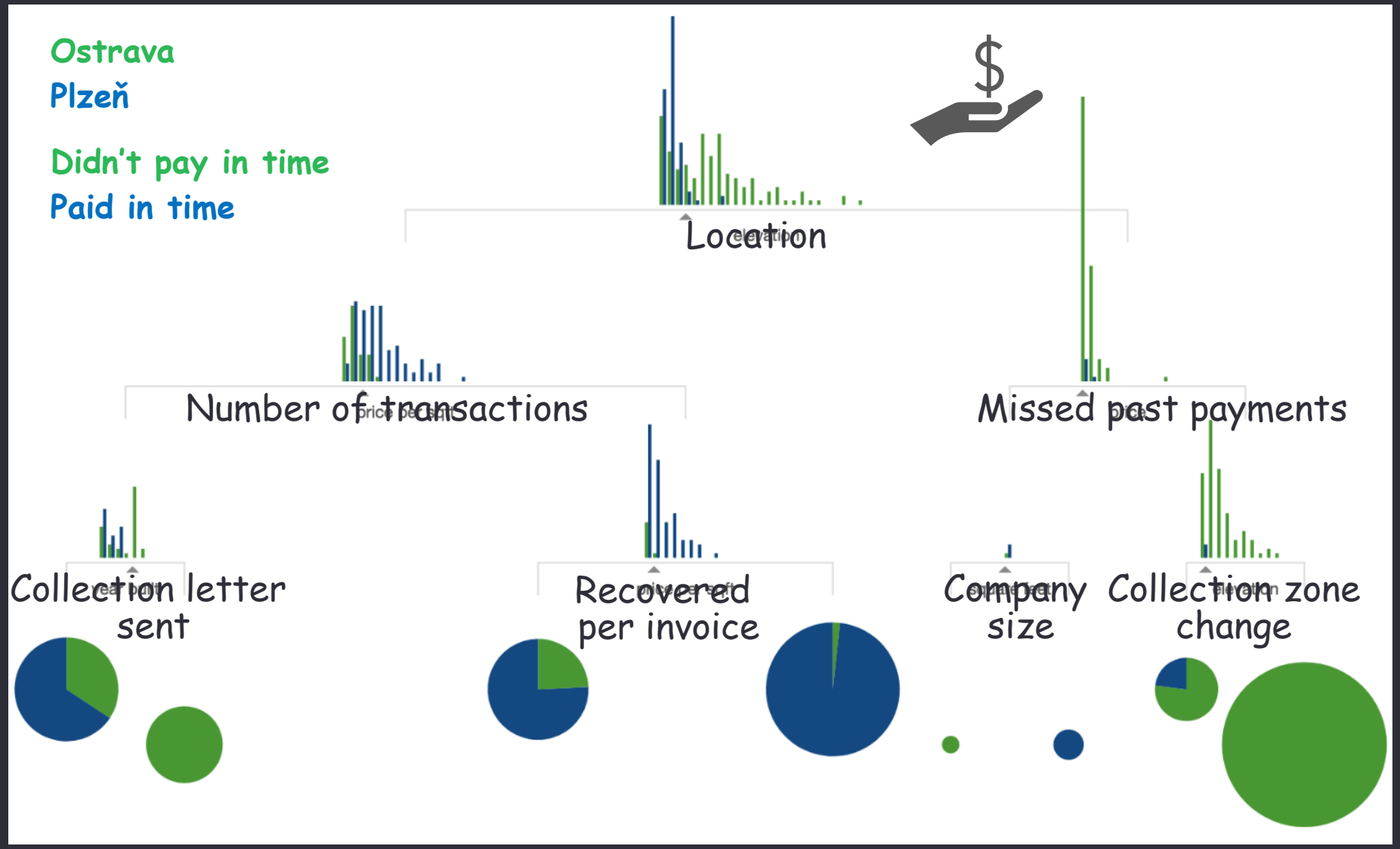
Computer Vision

Videoconferencing

Fake Obama created using AI video tool

Riding a Waymo self-driving taxi

How does narrow AI work? One example

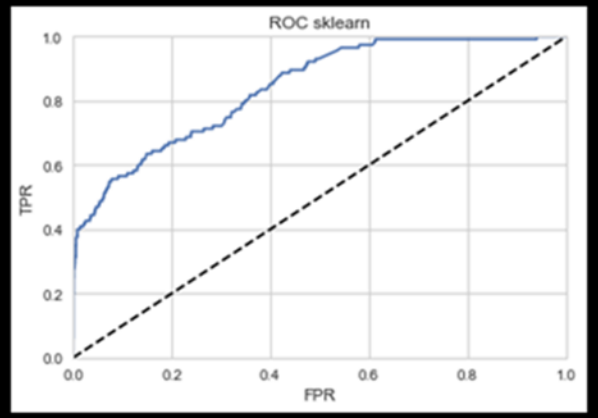


Source: R2D3

How do we know that it works?
(Credit collection example – to pay or not to pay, that is the question)

Best model

86% Roc-auc score



97% Precision for paying clients	**100%** Recall for paying clients
78% Precision for debtors	**31%** Recall for debtors

4 370 Predict pay Reality pay	20 Predict debt Reality pay
158 Predict pay Reality debt	72 Predict debt Reality debt

Baseline model

Random identification

50%

95% Precision for paying clients	**95%** Recall for paying clients
4% Precision for debtors	**4%** Recall for debtors

4 166 Predict pay Reality pay	224 Predict debt Reality pay
214 Predict pay Reality debt	16 Predict debt Reality debt

Selected areas and use cases in GBS

Process

Service requests impact scoring

Service requests classification & prioritization

Service request workload prediction

Automatic document data extraction

Finance

Predictive collections & optimization

Accounts receivable management

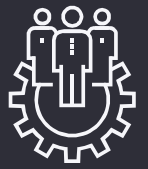
Cash-flow prediction

Detailed service cost allocation modelling

Reporting

SLAs and associated costs monitoring

Performance KPIs dashboarding & benchmarking



People

Workforce planning

Workforce performance improvement

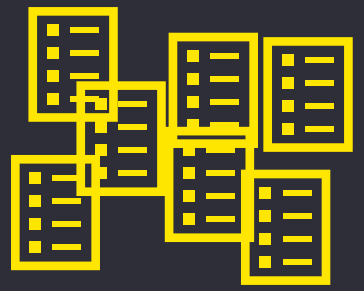
Employee churn and predictive retention

Employee absences prediction

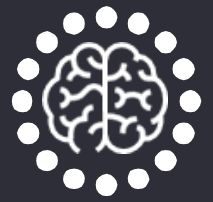
Predictive collections

Collections

1

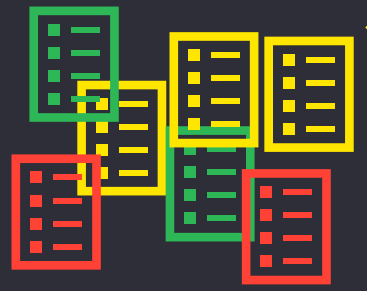


2 Machine Learning



Probability of non-payment and amount in risk

3



4 Collection process re-alignment
Workload planning

	Prediction models that were tested (results on following pages)	Paid previously	Will pay	Will pay in future
1	Would pay next month	✗	✓	
2	Might not pay next month	✓	✗	
3	Might stop paying	✓	✗	→
4	Might start to pay	←	✗	✓
5	Paying regularly	✗ ✓	✓	

Example insights

- Repeated wake-up calls represent an inefficient cost in the case of chronic non-payers
- Escalating the first-time non-payers to hard collection was inefficient in comparison to keeping them in soft collection
- Paying debtors are most likely to continue paying in the case of a call reminder approximately 5 days in advance of the payment date

Cashflow prediction

1 Cashflow history

Sales history

Product / service master data

Further demand influencing factors

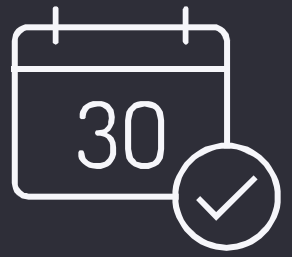
Price and its components

2 Machine Learning

Estimate sales for next period

3

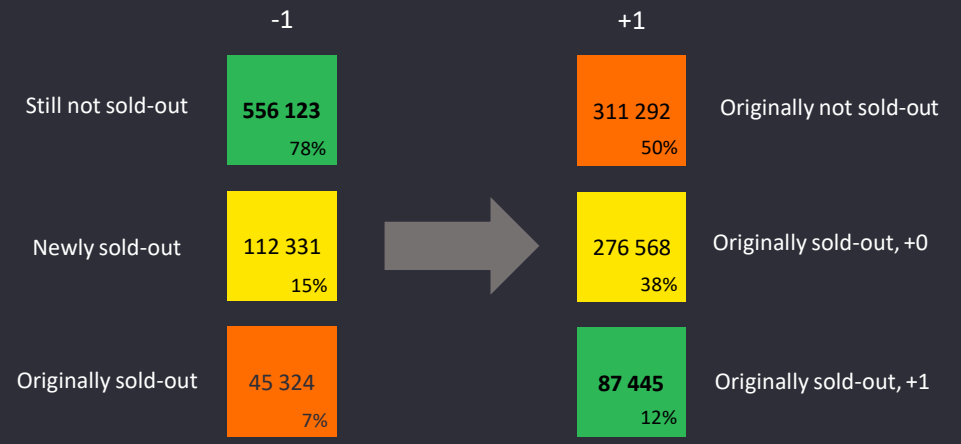
Average days to pay



Receivables / payables prediction

4 Cashflow prediction

Influencing factors



- Margin increase: 87k EUR
- Sales increase: 755k EUR
- Sold-out rate - original: 27.1%
- Sold-out rate - modified: 24.2%
- Margin increase on sample: 123k EUR
- Extrapolated margin increase: 1.58 mil EUR

Employee retention

Employee data

Machine Learning

CV / applicants

Onboarding

Trainings

Promotions

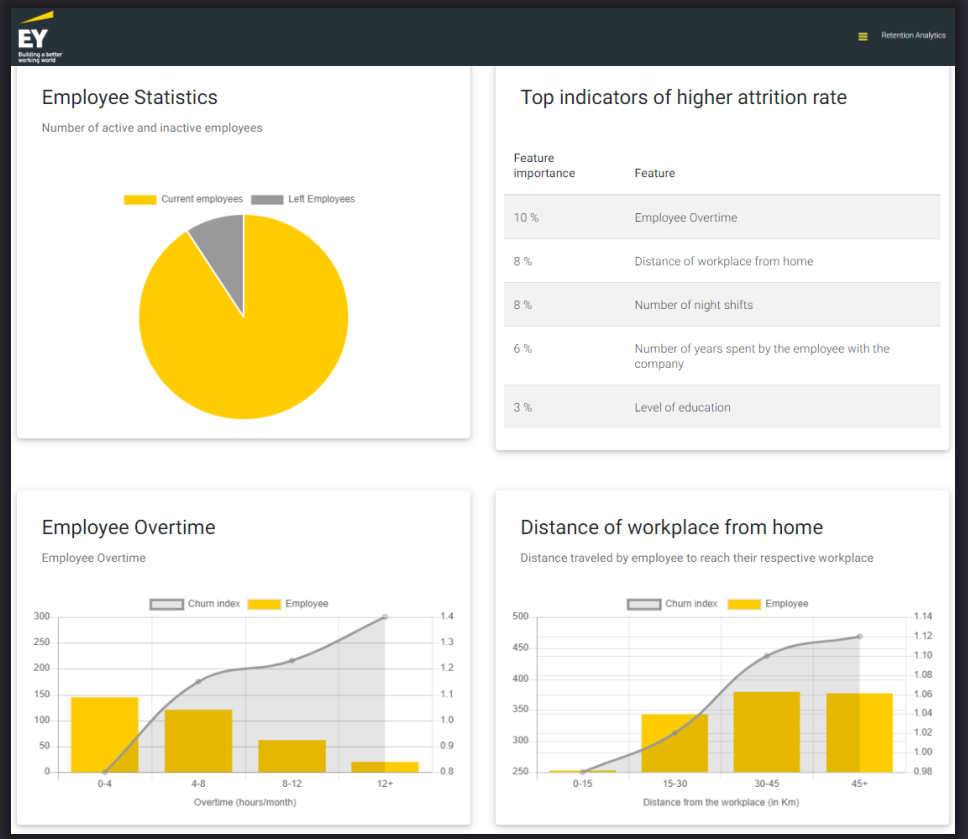
Performance

Shifts, teams, managers

Salary & bonuses

Churn risk

Main factors of churn



Our approach and process

Solutions

PREDICTIVE

What will most likely happen next?

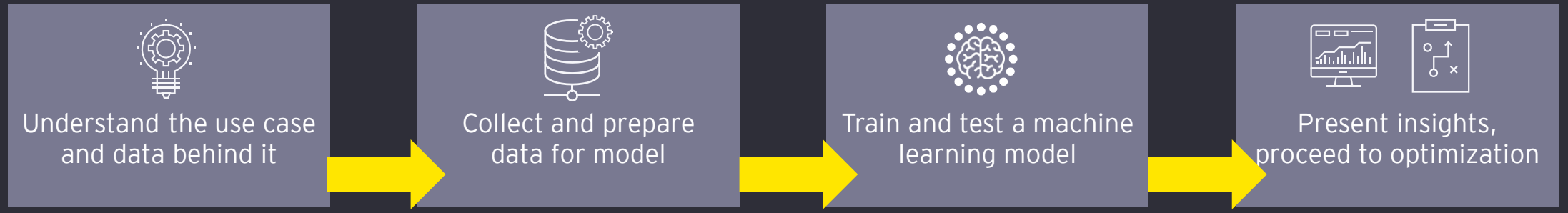
Predicting events of interest
(e.g. next customer action, sales, inventory requirements)

PRESCRIPTIVE

What is the optimal response or action?

Optimizing levers or possible decisions
(e.g. next offer to a customer, inventory level, product price)

Typical process



What data?

Sales
Prices & discounts

Inventory
Deliveries
Transportation

Customers & loyalty
Employees

Collections / invoices
Receivables

...and more...

Typical First Step
Proof of Concept

Goal

Develop and test machine learning model to determine its business added value

Outputs

Accuracy assessment and "size of prize" business case

Insights into main influencing factors

*Domain experts, process experts, project sponsor, IT & Data

Lessons Learned

DOs

- Start with "If we had the model what would we do with it?" question
- Connect the outputs of the models with specific decision-making processes
- Start with a PoC and estimate the business case (might not be monetary)
- Start and don't take the "when we have this or that data / data warehouse" approach
- Train in-house domain experts in Machine Learning

DONT's

- Wait for this or that data
- Avoid testing data science solutions on restricted / imperfect data
- Rely on a single technology, single approach
- Hire theoretical Data Scientists (hire Machine Learning or Data Engineers with some domain knowledge) and expect results right away
- Call everything AI - which I did several times :-)

Thank you

Innovate
Experiment
Inspire