#IODATAQLIK

MASCHINELLES LERNEN FÜR ALLE GESCHÄFTSBEREICHE

Andreas Schwarz
Sales Consultant, iodata

Dennis Jaskowiak, Principal
Solution Architect, Qlik

LIVE-Webinar: 04. Mai | 14 Uhr

Qlik AutoML™
Daten codefrei "trainieren".

- Vorgehen und Vorteile von Qlik AutoML
- Wie eine datengesteuerte und agile Organisation funktionieren kann – über alle Unternehmens-Hierarchien hinweg.
- LIVE DEMO

io data

Agenda

01 Vorstellung

0 Einführung

03 Live Demonstration

04 Ihre Fragen

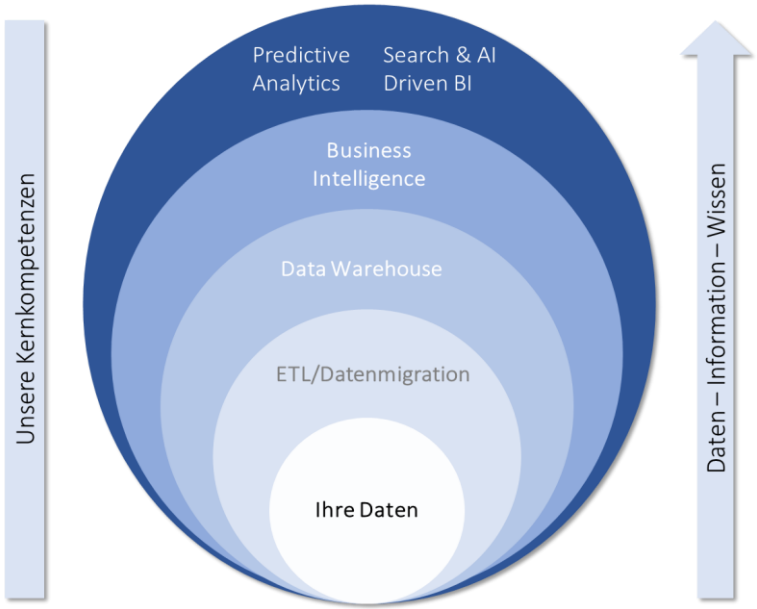
05 Kontakt: andreas.schwarz@iodata.de

iodata Kernkompetenzen und Fokus

Firmengründung: 2000

Firmensitz: Karlsruhe

Kernkompetenzen:
ETL / Datenmigration
Data Warehouse
Business Intelligence
Big Data
Predictive Analytics
Search und KI



Fokus: Erstellung von individuellen Business Intelligence und Datenstrategien. Implementierung, Beratung, Support und Verkauf der benötigten Software und der dazugehörigen Dienstleistungen.

Qlik AutoML

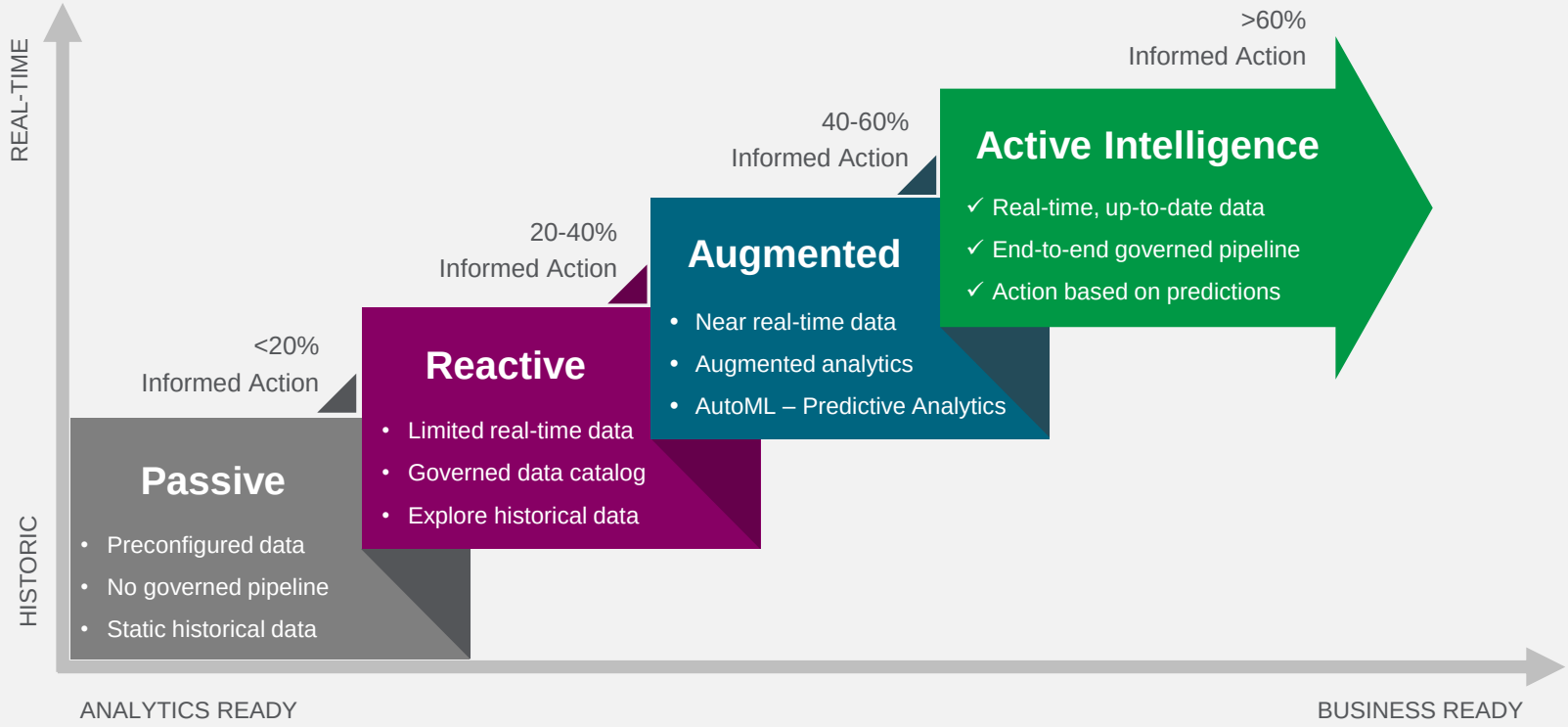
Machine Learning for Analytics Teams

Dennis Jaskowiak
Principal Solution Architect

May, 2023

Analytics Continue to Evolve

From passive BI to Active Intelligence



Qlik Cloud

Qlik's Platform for Active Intelligence

Data Integration

- Data Movement & Streaming
- Data Warehouse Automation
- Data Transformation
- Application Automation

Analytics

- Visualization & Dashboards
- Augmented Analytics & AutoML
- Embedded Analytics
- Alerting & Action

FOUNDATIONAL SERVICES

- Catalog & Lineage
- Artificial Intelligence
- Associative Engine
- Orchestration
- Governance & Security
- Reporting & Collaboration
- Developer & API

Hybrid Cloud

Universal Connectivity

- RDBMS
- Data Warehouse
- Data Lake
- SAP
- SaaS
- Apps
- Mainframe
- Stream
- Files (JSON, xml, CSV)

aws · Azure · Google Cloud · On-premises

Qlik

Serving all users and use cases

Qlik unlocks the power of augmented analytics for everyone

Exploratory Analysis → Automated Machine Learning → Sophisticated Data Science

Qlik Sense

- Dashboards, Insight Advisor, Natural Language
- Consume AutoML and Data Science in Qlik Sense

Qlik Sense & Qlik AutoML

- AutoML, Data Visualization, Insight Advisor
- Publish AutoML Models and Consume Data Science in Qlik Sense

3rd Party Tools

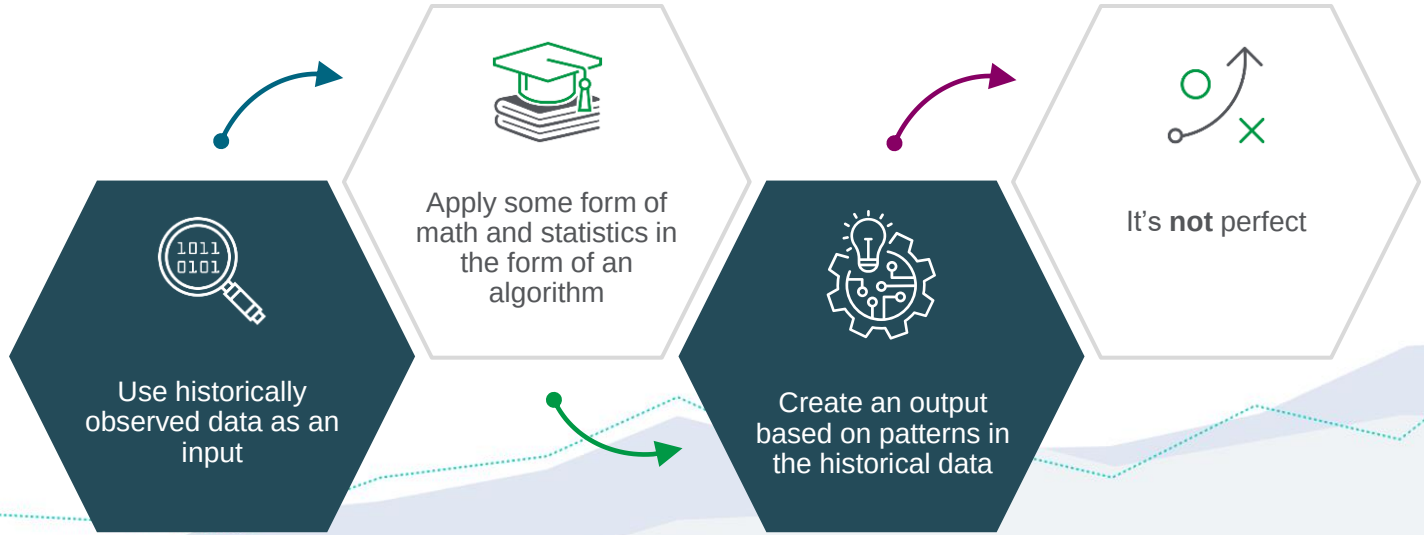
- Amazon SageMaker, AzureML, DataBricks, etc.
- Publish Data Science Models in Qlik Sense

Business Decisions	Everyday Use-Cases	Complex Problems

Qlik delivers the right capabilities to help users reach their full potential with data

What is Machine Learning?

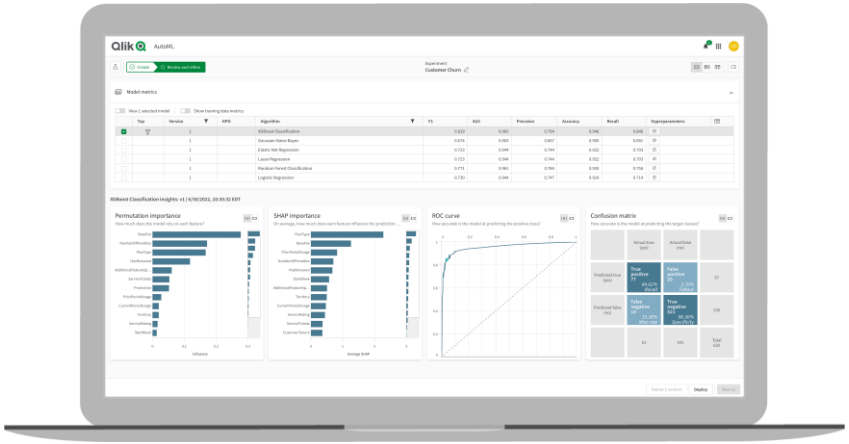
"Recognizing patterns and drivers in historical data to create models that predict future outcomes."



Introducing Qlik AutoML

No-code, Automated Machine Learning for analytics teams

- **Easily create predictive analytics**
  - Find Patterns and understand key drivers in historical data and build ML models
  - Use models to generate predictions on current data sets
  - Explore predictive data and “what-if” scenarios in Qlik Sense
- **Uniquely designed for analytics teams**
  - No-code model development
  - Unlimited experimentation
  - Easy model deployment
- **Explainable AI**
  - Delivers prediction influencer data at the row level
  - Understand not just what might happen, but why, and what action can be taken to affect outcomes
- **Fully integrated into Qlik Cloud**

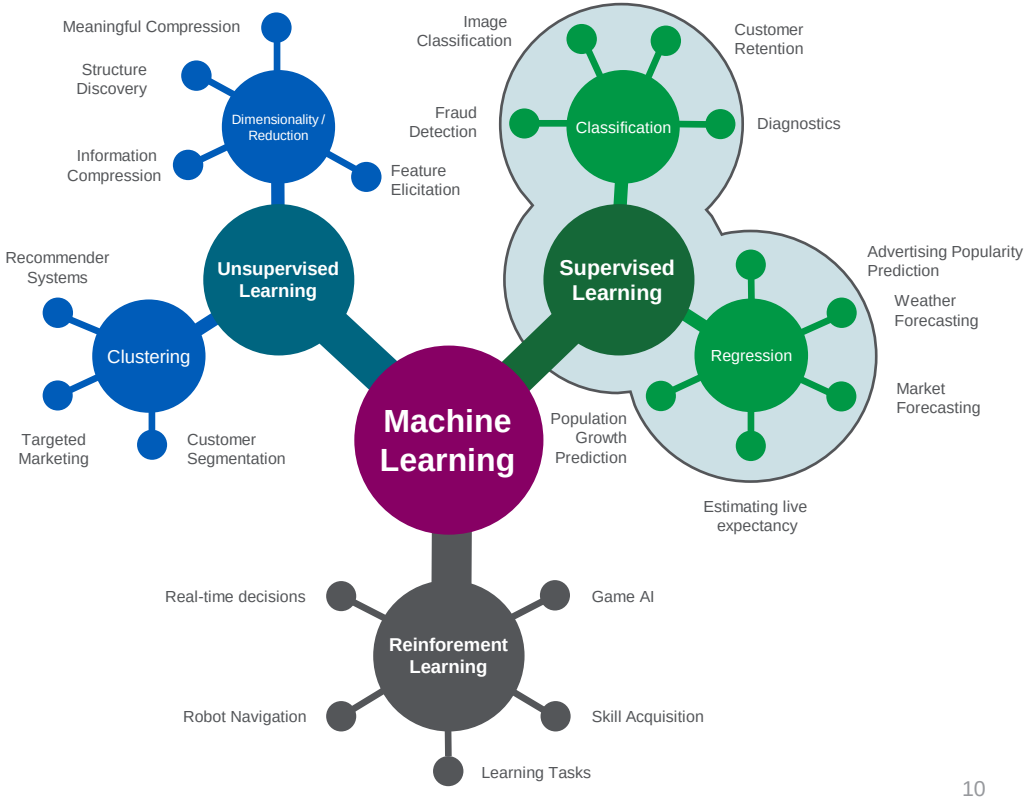


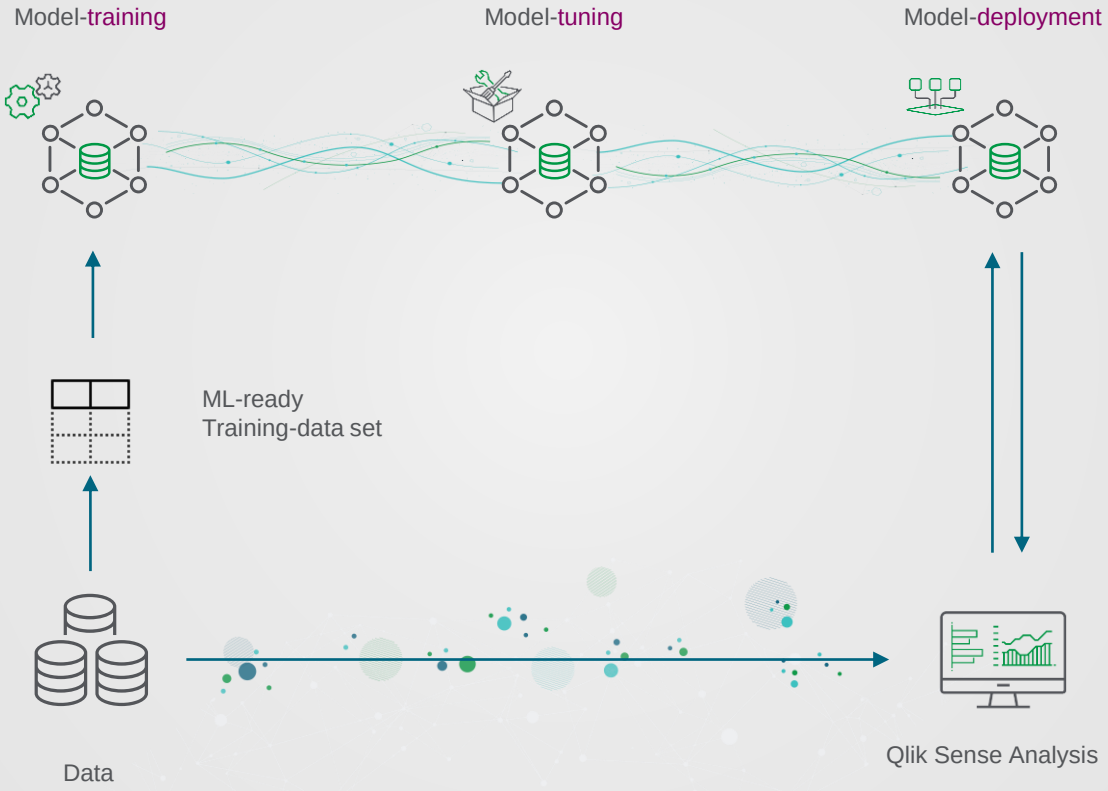
G2 – Data Science and Machine Learning Platforms

Supported ML Types

What types does Qlik AutoML use?

- Qlik AutoML uses structured batch **supervised machine learning** and can handle classification and regression problems.
- Regression: Prediction of continuous values
- Classification: Predicting group membership
- Algorithms used in Qlik AutoML:
  - General Linear Algorithms
    - Linear & Logistic Regression
  - Ensembles
    - Random Forest
    - XGBoost
  - Other
    - K Nearest Neighbors
    - Naive Bayes
    - SVM
  - etc. (top algorithms on *scikit learn*)



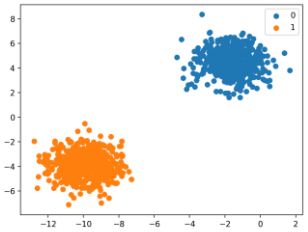

Model-training
Model-tuning
Model-deployment
ML-ready
Training-data set
Data
Qlik Sense Analysis

What type of questions Qlik AutoML can solve?

Binary Classification:

Any question that can be answered with a **Yes or No**

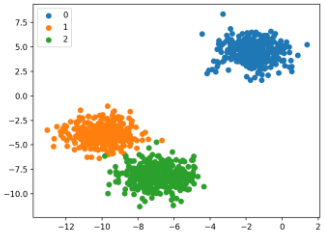
- Will a customer churn?
- **Will my inventory stock out?**
- Will my project be on budget?
- Does preventative maintenance need to be performed?
- Will a patient cancel their hospital appointment?



Multi-Class Classification:

Questions where there could be **multiple outcome choices**

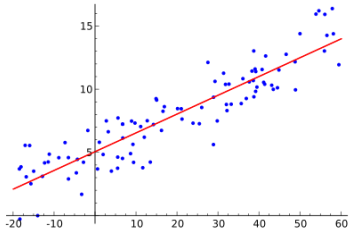
- What product will a customer purchase?
- What subscription type best fits the customer?
- **Which inventory groups will be out of stock?**
- What facility will a patient be discharged to?



Regression/Numeric:

Predicting a **number at a future point**

- What is the expected Lifetime Value of a customer?
- What will total sales be in Q4?
- How long will a patient be in the hospital?
- How many website conversions will be completed in December?
- **How much inventory will be on hand?**



Getting your dataset ready for training

For Qlik AutoML

Turning a business use case into a specific and actionable machine learning question is giving the necessary structure for a successful project.

Transform data types

Use the Qlik loading script to define data types

Class balancing

AutoML provides you with meaningful visualizations to uncover unbalanced classes

Data leakage

AutoML delivers metrics and visualizations to uncover leakage

Create new features

Generate new features with the Qlik loading script

Correlation

Explore your data with Qlik Sense to uncover correlations

Cardinality

AutoML takes care of high cardinality features

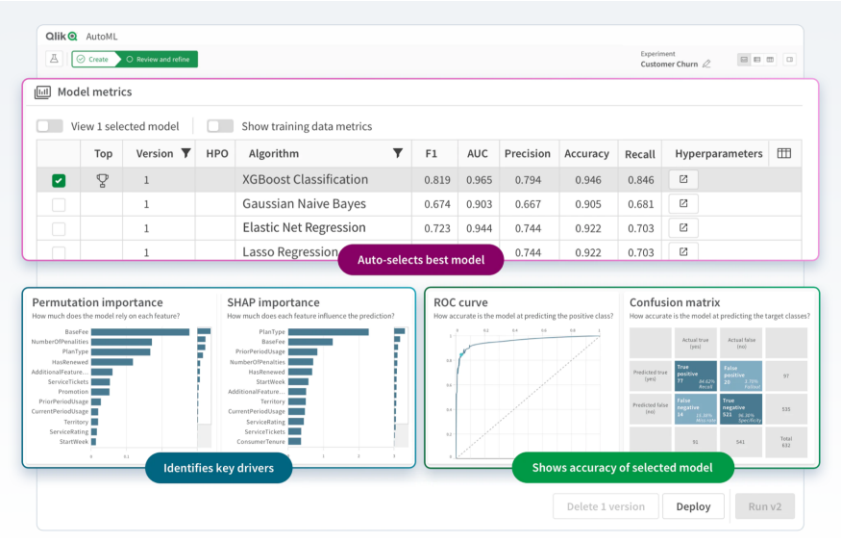
Handling missing values

You can use AutoML to predict missing values

Automated Model Creation

No-code experimentation and development of robust ML models

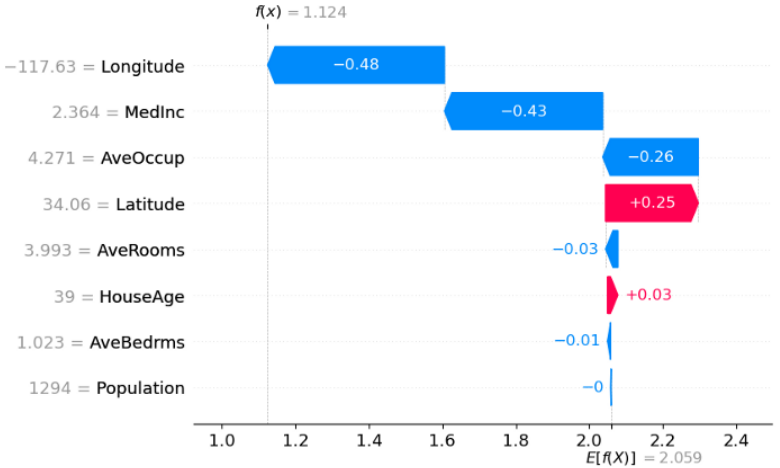
- Select your target field and AutoML automatically generates a model
  - Provides pre-processing and data preparation
  - Identifies key drivers affecting outcomes in historical data, with Shapley values
  - Tests a number of best-of-breed algorithms and suggests the best model
  - Iterate and refine rapidly until final model is achieved
- Simple, no-code analysis and model generation
- Experiment freely, without limitations or additional compute cost
- Leverage Qlik's associative engine and data integration capabilities to assemble ML data sets



Shapley Values (SHAP)

explainable AI with Shapley values

- Shapley values are a widely used approach from **cooperative game theory** that come with desirable properties to explain machine learning models.
- Helps to debug/improve/explore models
- Monitoring models by explaining their error over time
- Encode prior beliefs
- It's a **feature importance measures**
- → Every feature is a player in a cooperative game
- → Prediction = overall pay-out
- Each player is attributed a share to the overall payout (**faire value**).
- Importance of an individual variable on data-set level (**per prediction**)



Given the California Housing Dataset (available on the scikit-learn library), we can isolate one single observation and calculate the SHAP values for this single data point.

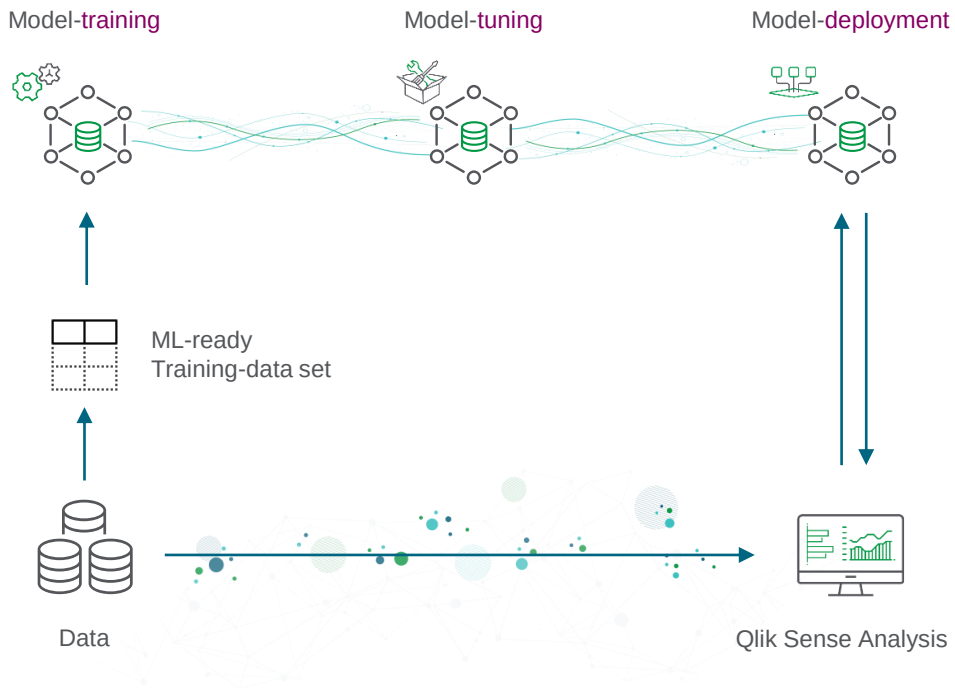
Predictive Analytics

Deploy models and make predictions at scale

- Get robust insight into potential future outcomes
  - Load current data and run model
  - Generate predictions for outcomes with record-level explainability data
  - Easily publish complete data sets and integrate models into Qlik Sense for further exploration
- Easy deployment for predictive analytics at scale
  - Multiple deployment options
  - Distributed process to manage large workloads
  - Full support for model rollback, promotion, and challenger use cases
  - Scheduling and orchestration
- Manage with enterprise-grade governance and access controls

Qlik AutoML Workflow

High-level Workflow



Real-time:
Predictions via API Access

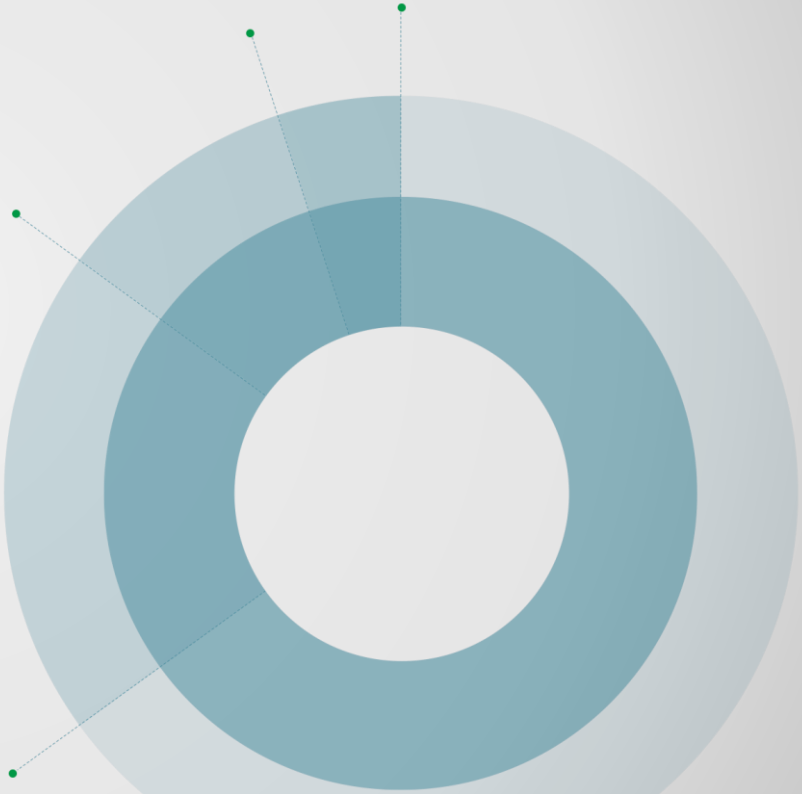
Ad-hoc:
Dataset prediction

Batched:
Can be used in Qlik Load Script
(Qlik AutoML Connector)

Real-time:
Can be used in Qlik Sense Frontend
(endpoints.ScriptEvalStr(…))

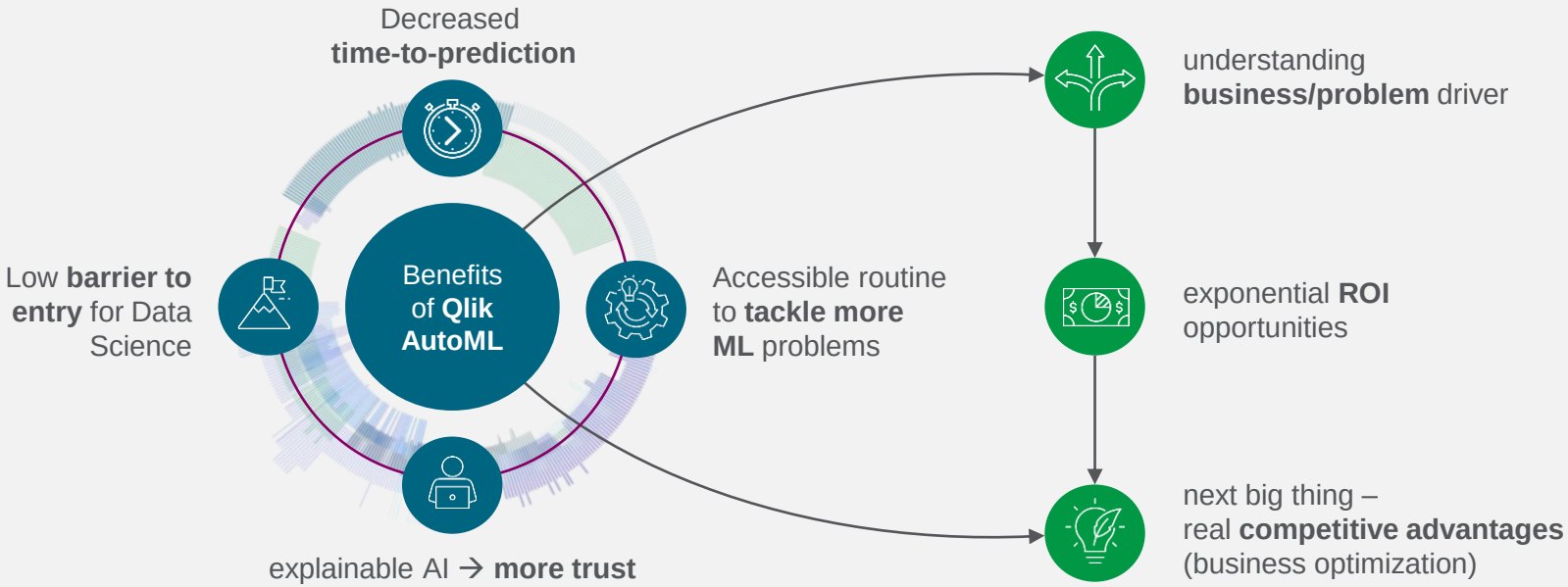
Demo

Qlik AutoML in action



Value of Qlik AutoML

No-code, automated machine learning for analytics teams



→ People are used to ask questions they can answer or might get answers to. Think ahead! Which question you can't answer today?

Kontaktieren Sie uns gerne

Kontaktdaten

Andreas Schwarz
0721 - 626 97 - 22
andreas.schwarz@iodata.de

iodata GmbH
Steinhäuserstr. 20
76135 Karlsruhe

www.iodata.de
www.iovolution.de