

Using Text Mining & ML to Enhance the Credit Risk Assessment Process



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What is Spotcap?



An innovative on
balance sheet lender



Offers **versatile and accessible finance** to SMEs



Has developed a
unique, sophisticated, proprietary credit
algorithm



Assesses **real-time business performance**
next to traditional credit
scores

Traditional credit assessment practices are disconnected from the modern world

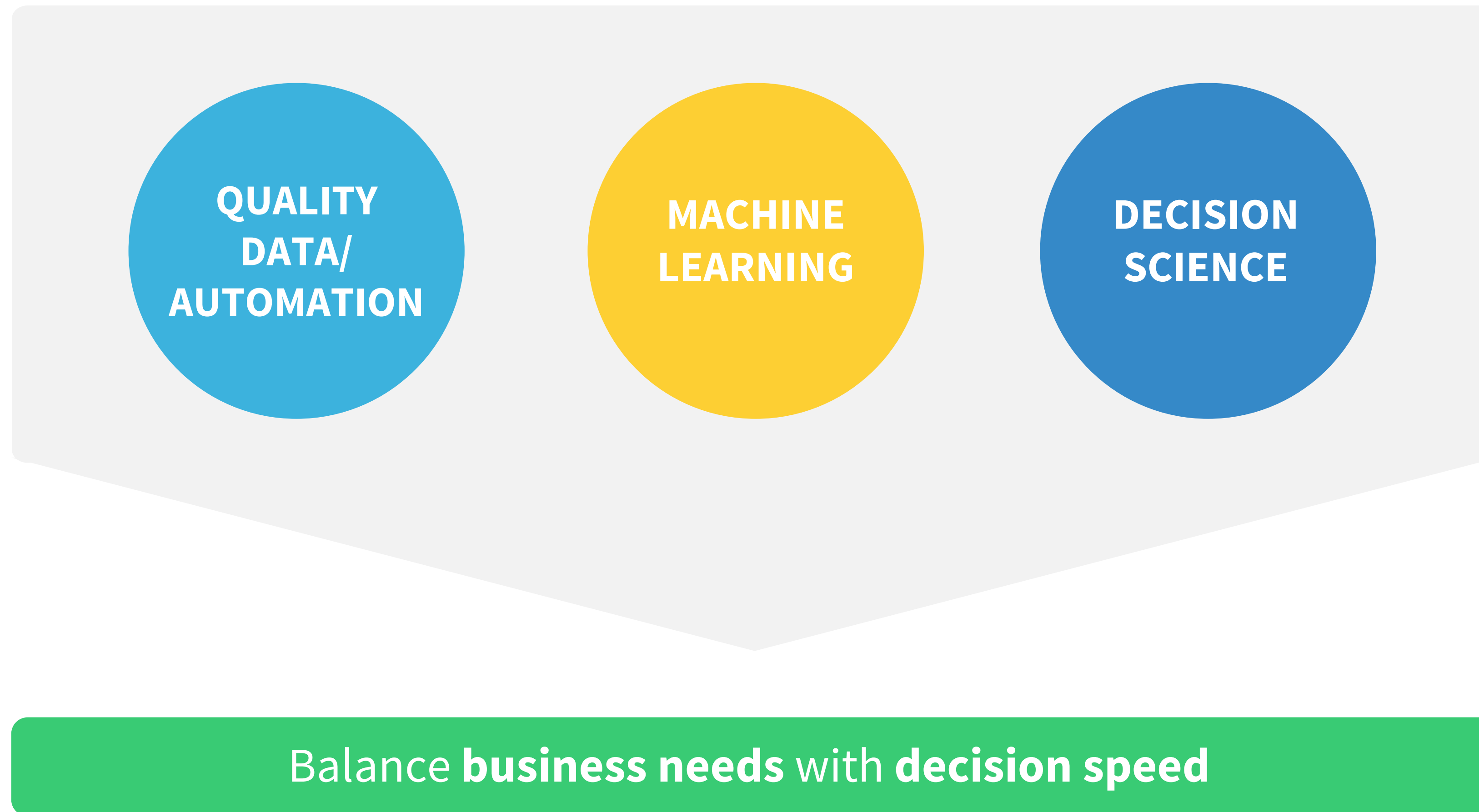
Traditional credit assessments

- Based on credit scores & backward looking information
- Often use outdated financial data
- Can take up to several weeks

Today's balance sheet lenders must:

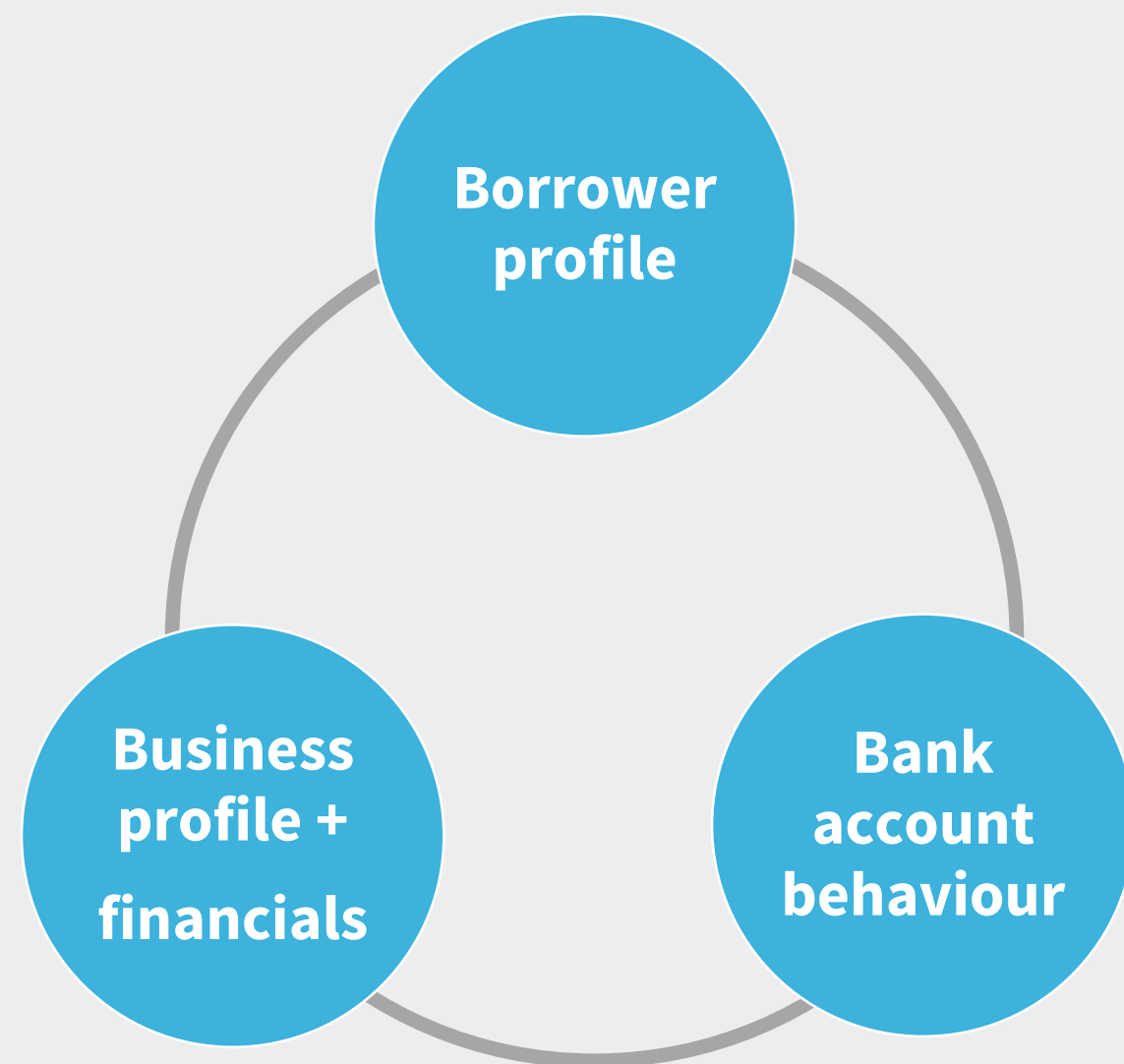
- Have an in-depth understanding of customers to remain competitive
- Meet complex regulatory requirements
- Deal with a wealth of data about their customers
- Make decisions faster than ever
- Safeguard themselves against fraud & defaults

Modern lenders need to balance business needs with speed



Spotcap has turned tradition on its head

MAIN COMPONENTS OF RISK ASSESSMENT (PROBABILITY OF DEFAULT MODELS) FOCUS ON:

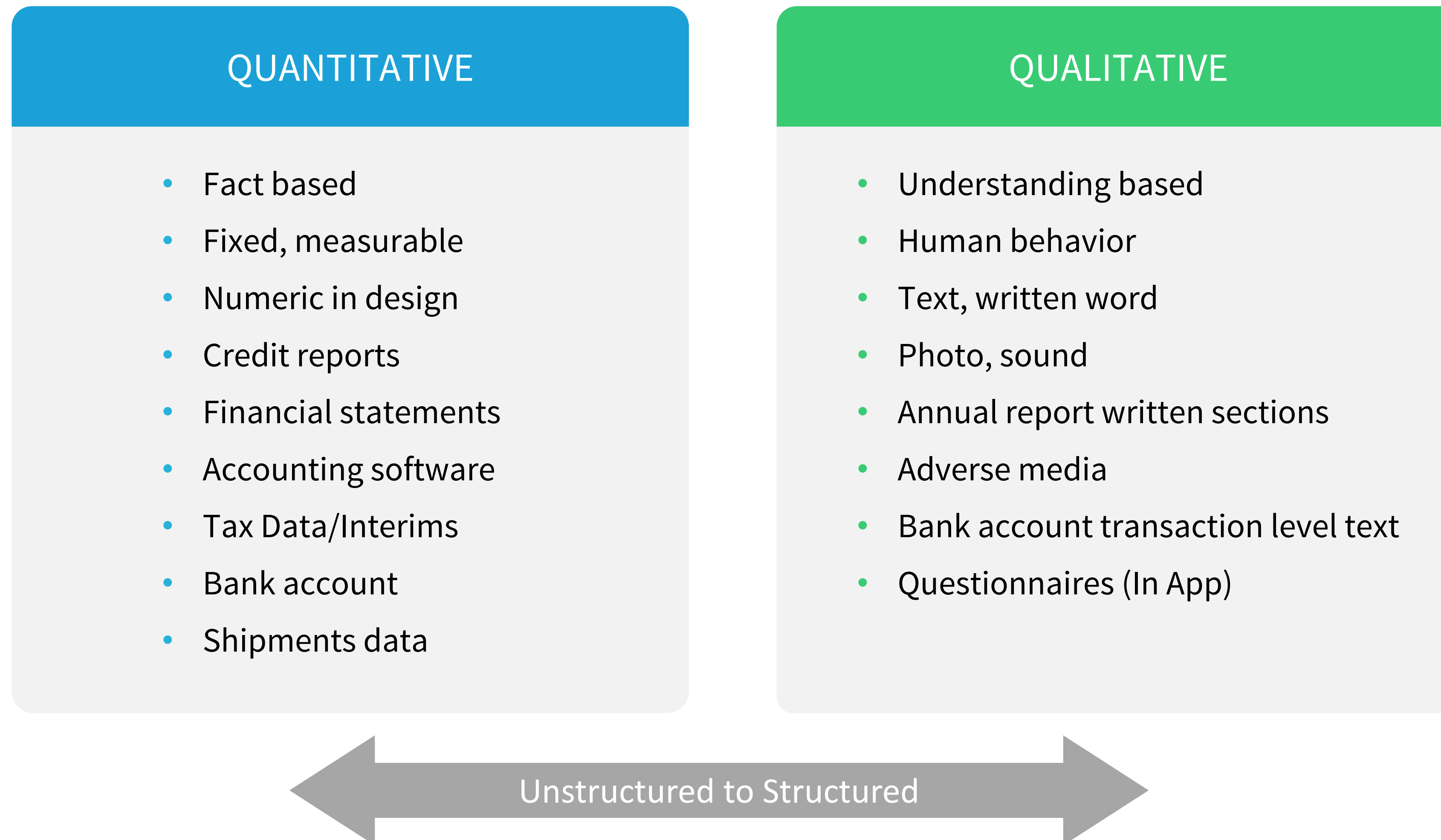


MODELS LEVERAGE ML & DECISION SCIENCE TO DELIVER SMARTER RISK ASSESSMENT

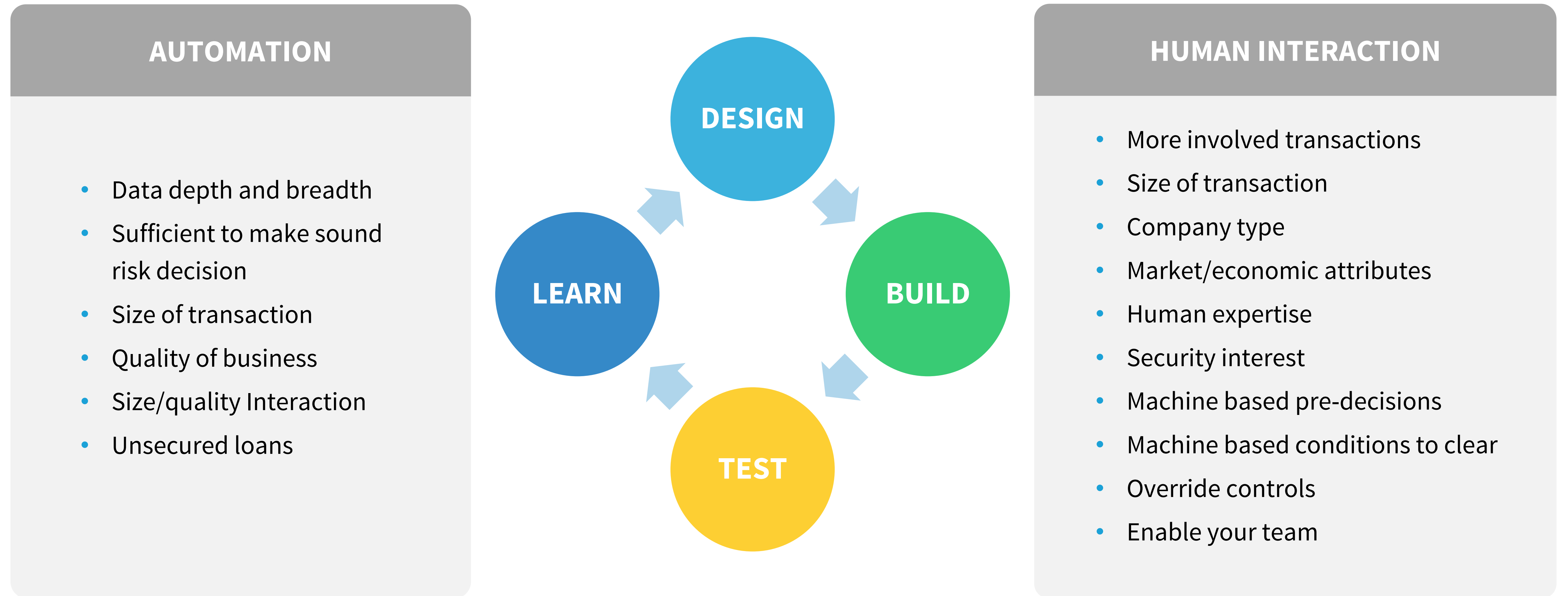
- Rating Models (SpoRT, incl. Advanced Bank Analytica Score)
- Limit Determination (ALCo)
- Decision Algorithm (DAL)



Real-time, high-quality data sits at the center of our credit assessment process



As does finding the right balance between automation & that human touch



Data understanding and preparation is key

PROMOTE BEST PRACTICES

Promotion of R and data science within the company through developing ‘spotcapR’ - an internal R package to foster DS knowledge, as well as optimize and speed-up data science project workflow.

FOCUS ON REPRODUCIBILITY

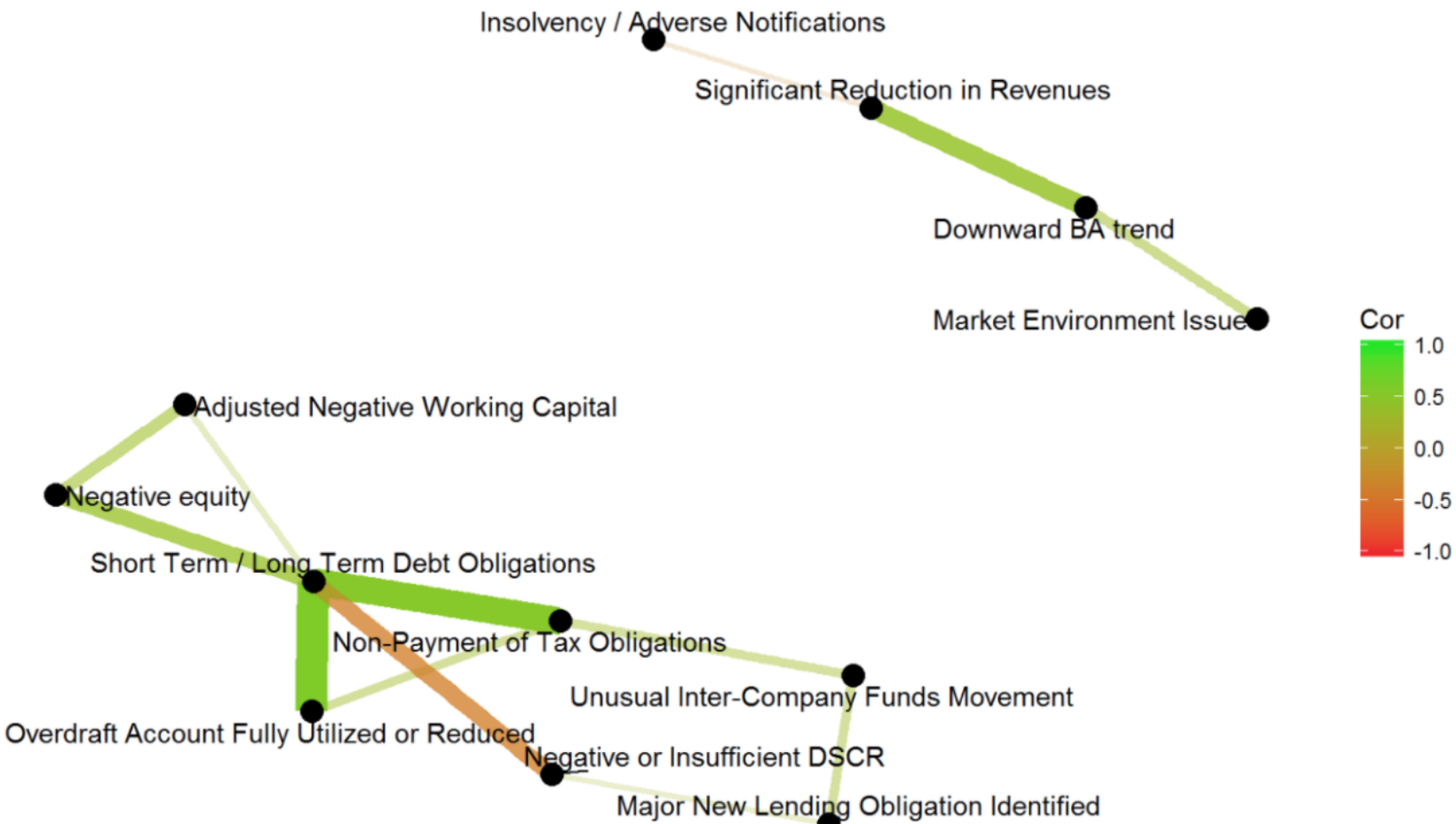
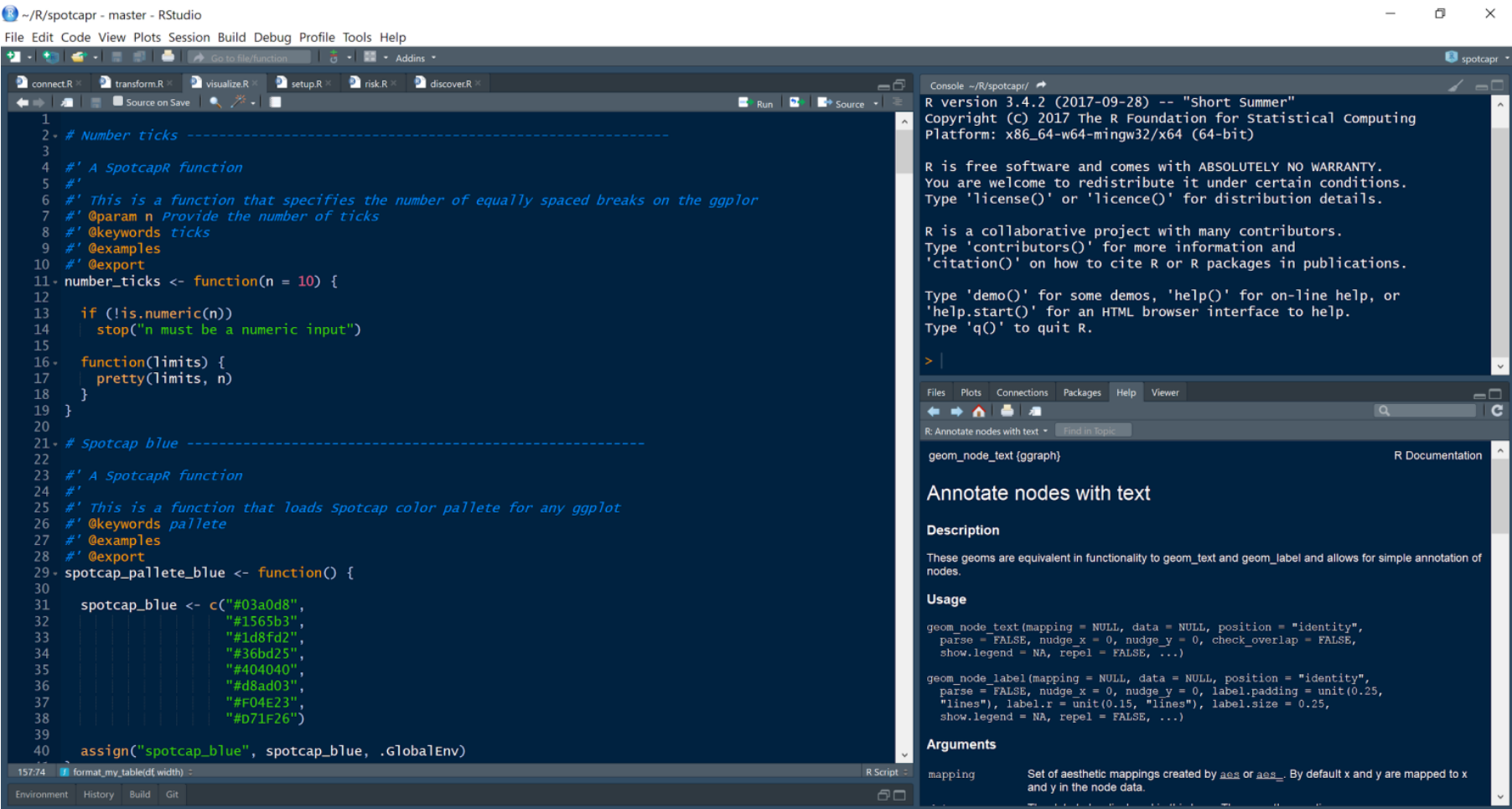
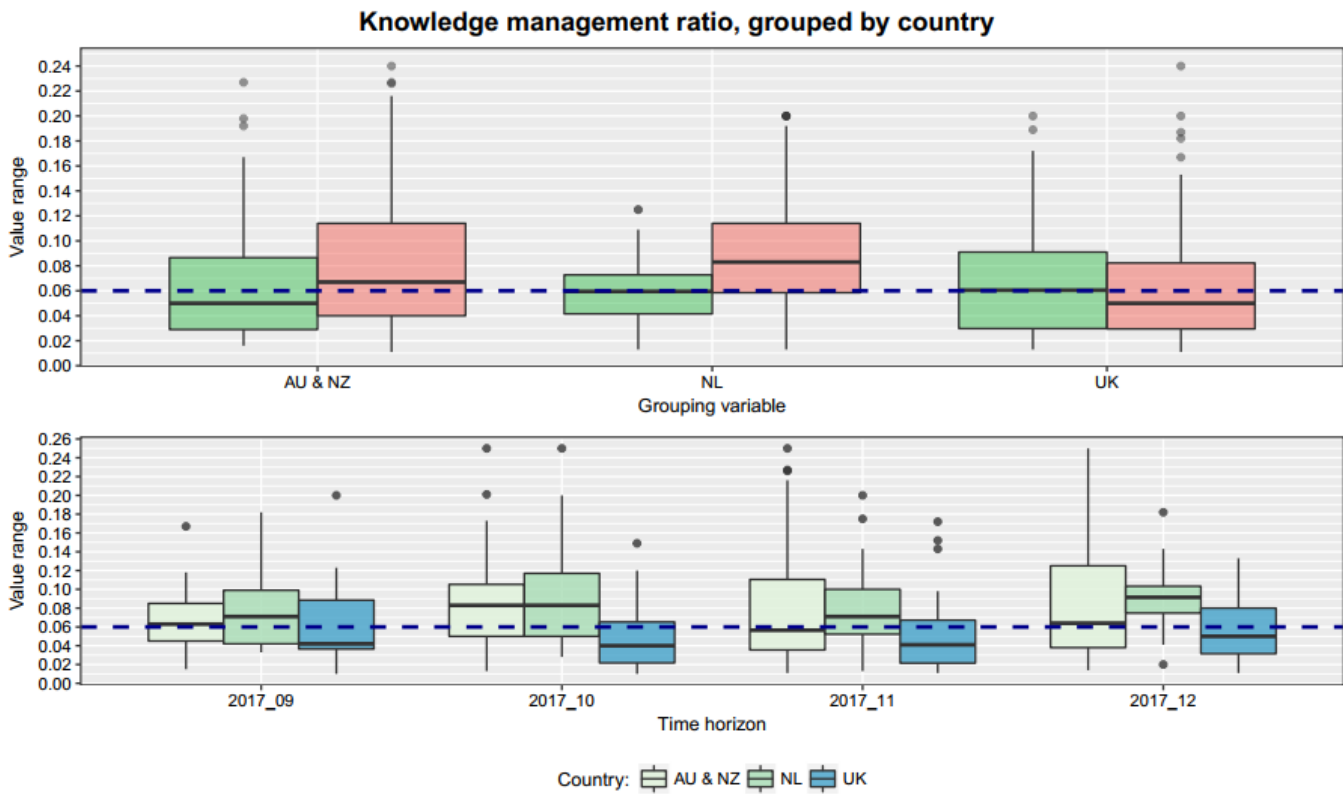
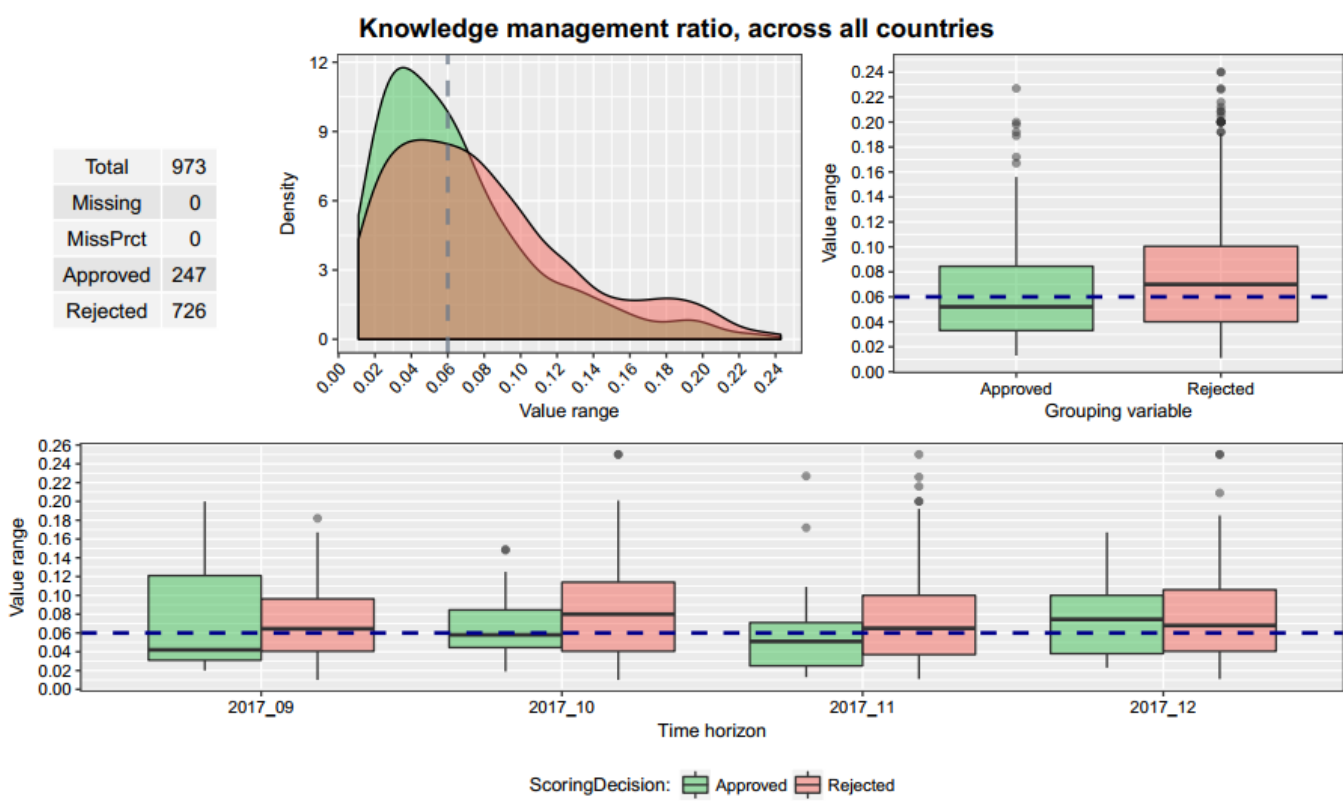
Every project and analysis is designed to be easily refreshed and repeated at any point in time.

SHARING KNOWLEDGE

Insights and ideas are shared with respective team members in an interactive and appealing way through RMarkdown reports.

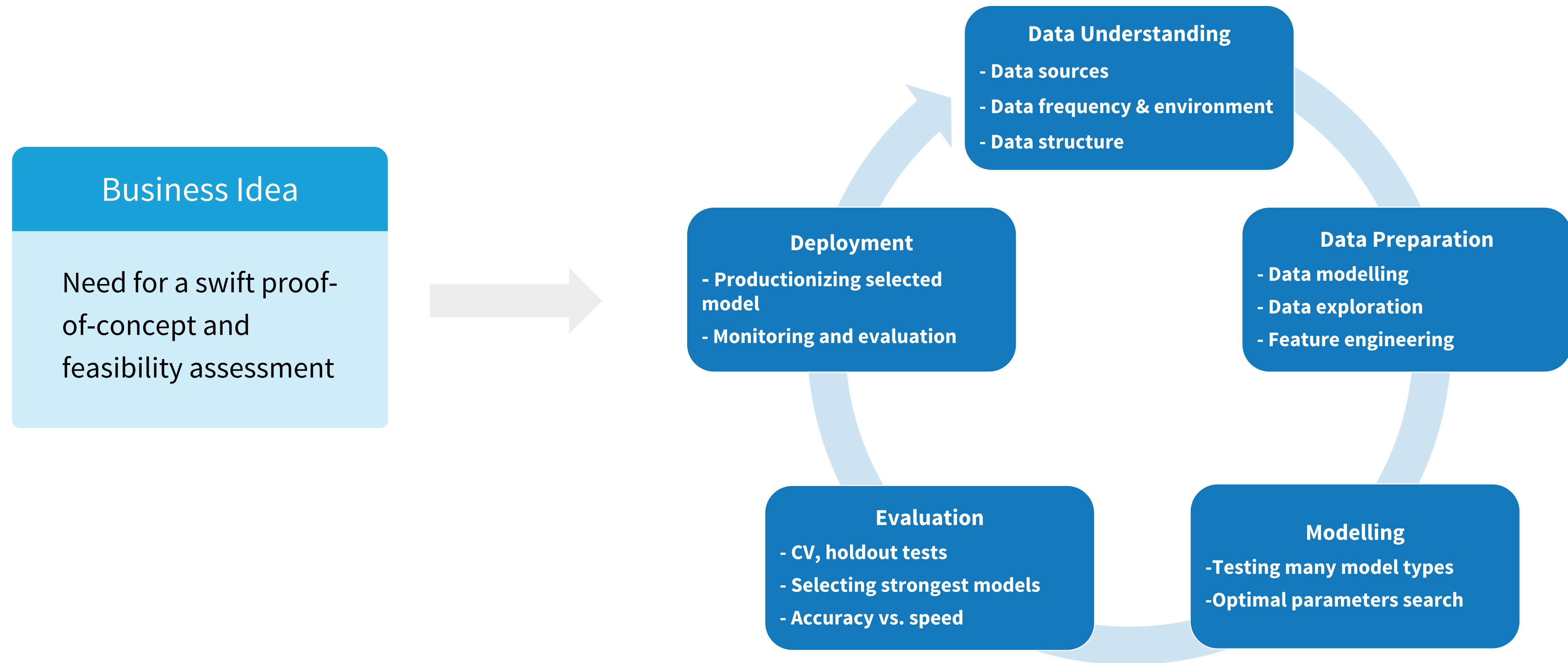
Knowledge management ratio

Distribution analysis

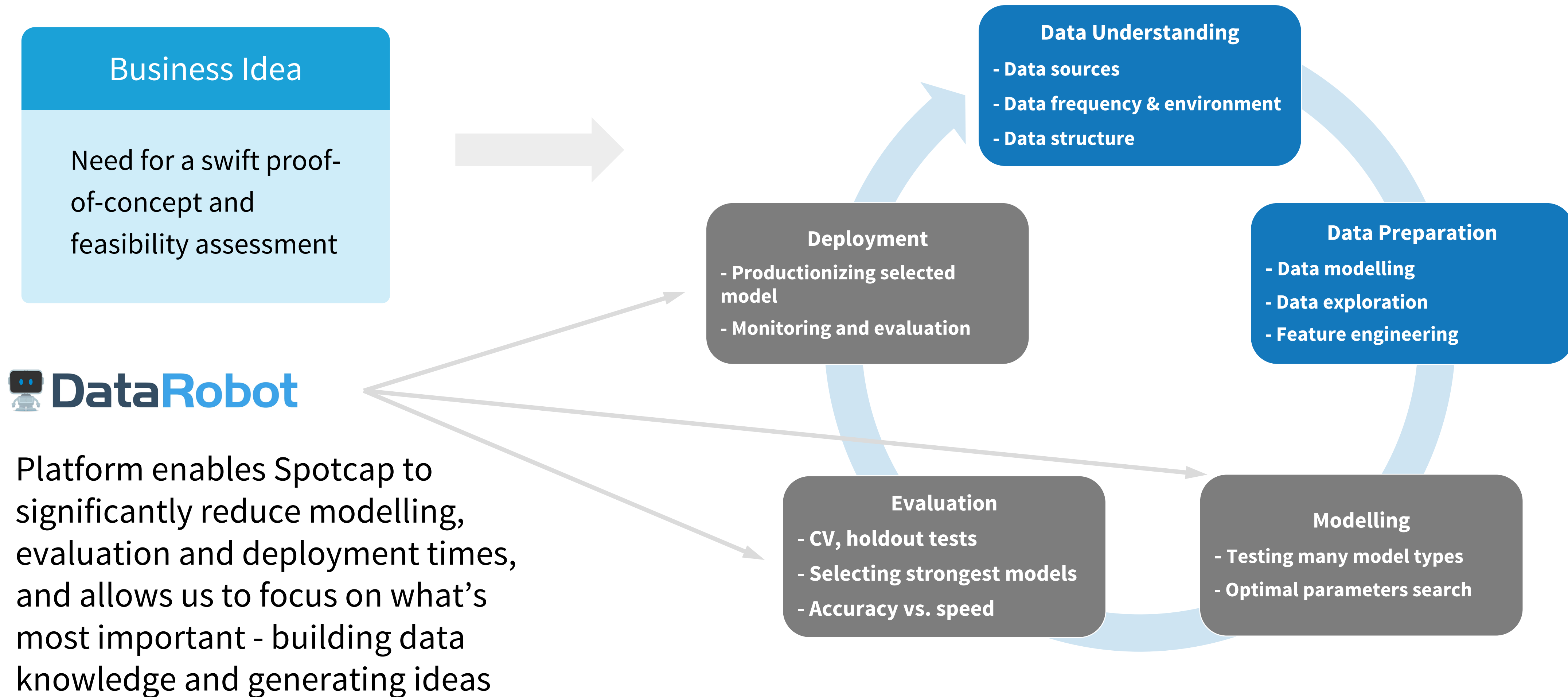


Understanding the data science lifecycle

Classic Data Science Project Lifecycle



Spotcap has made the data science project lifecycle more efficient



ML models can add value, but only when you know your data

- **KYC** - first and foremost
- Where do you start (Evolution)?
 - **Expert system**
 - Rules engine
 - Quantitative models
- Balancing **energy and results**
- Build a simple data laboratory
 - **Know the data** (Expertise)
 - Exploratory data analysis
 - Simple models to determine value
- Move the **value to production**
- Explore the remaining
- Cut and run
- **Results, Results, Results**
 - Monitor the portfolio
 - Track the models
 - Score & attribute migration



Our risk assessment utilizes hundreds of data points

Data processed and applied:

CREDIT BUREAU

- Not part of the main performance model except for general borrower characteristics
- Credit Score and adverse information used for warning signals / hard declines
- Primary use: verification

TRANSACTIONS (BANK ACCOUNT)

- Main source for probability of default model
- Transactional data used from bank account connections (proprietary) or parsed from bank statements provided
- 200+ attributes used for algorithm; variety of semantic checks for warning signals and profiling

TRADITIONAL FINANCIALS

- App Lite (<50k amounts): no requirements to submit documents
- Standard Application (>50k amounts): annual accounts and VAT returns to derive standard financial ratios and trends
- Relative operating surplus used to determine eventual credit amount (combined with BA)

USER / WEB

- Financial and non-financial information asked to verify data from 3rd parties
- Web search (for larger tickets) for more holistic assessment also using web automation tools (RPA)

The Bank Account 1st Gen model offers a highly predictive picture of default probability

The Bank Account 1st Generation Model is specified from over 200 numerical variables that can be organized into three different groups that constitute together a comprehensive and highly predictive picture of default probability in the next 12 months.

Bank account general characteristics

Set of variables that provide essential information about the number of transactions, their volume and frequency.

Relative bank account activity indicators

Using relative figures can improve model performance significantly.

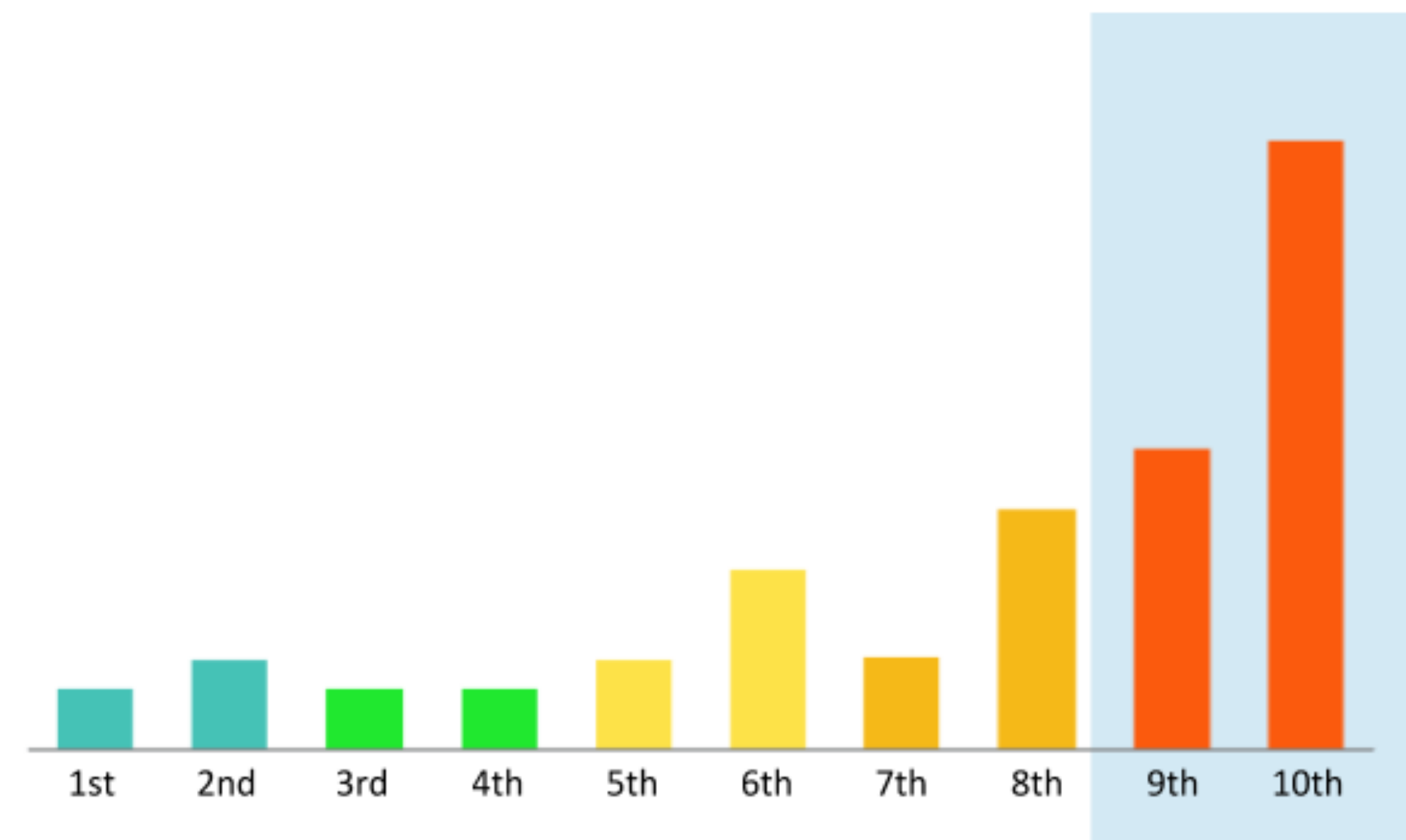
Bank account balance development & trends

Changes in the bank account activity or the volume of transactions could be vital for client's ability to repay.

Client bad rates based on BA model deciles

Percent of active clients*

Eliminate



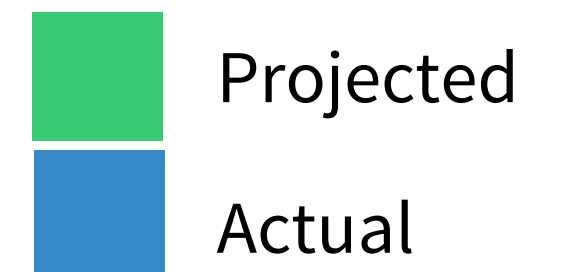
2nd Gen Bank Account model significantly improved credit performance ...

KEY OBSERVATIONS

- Historical loan cohorts with slightly higher credit losses especially around D credit grade
- Simulation and application of 1st generation bank account (BA) model for 2017 cohorts onwards
- H1 2017 cohort credit performance already reveals significant improvements while maintaining conducive approval rate levels

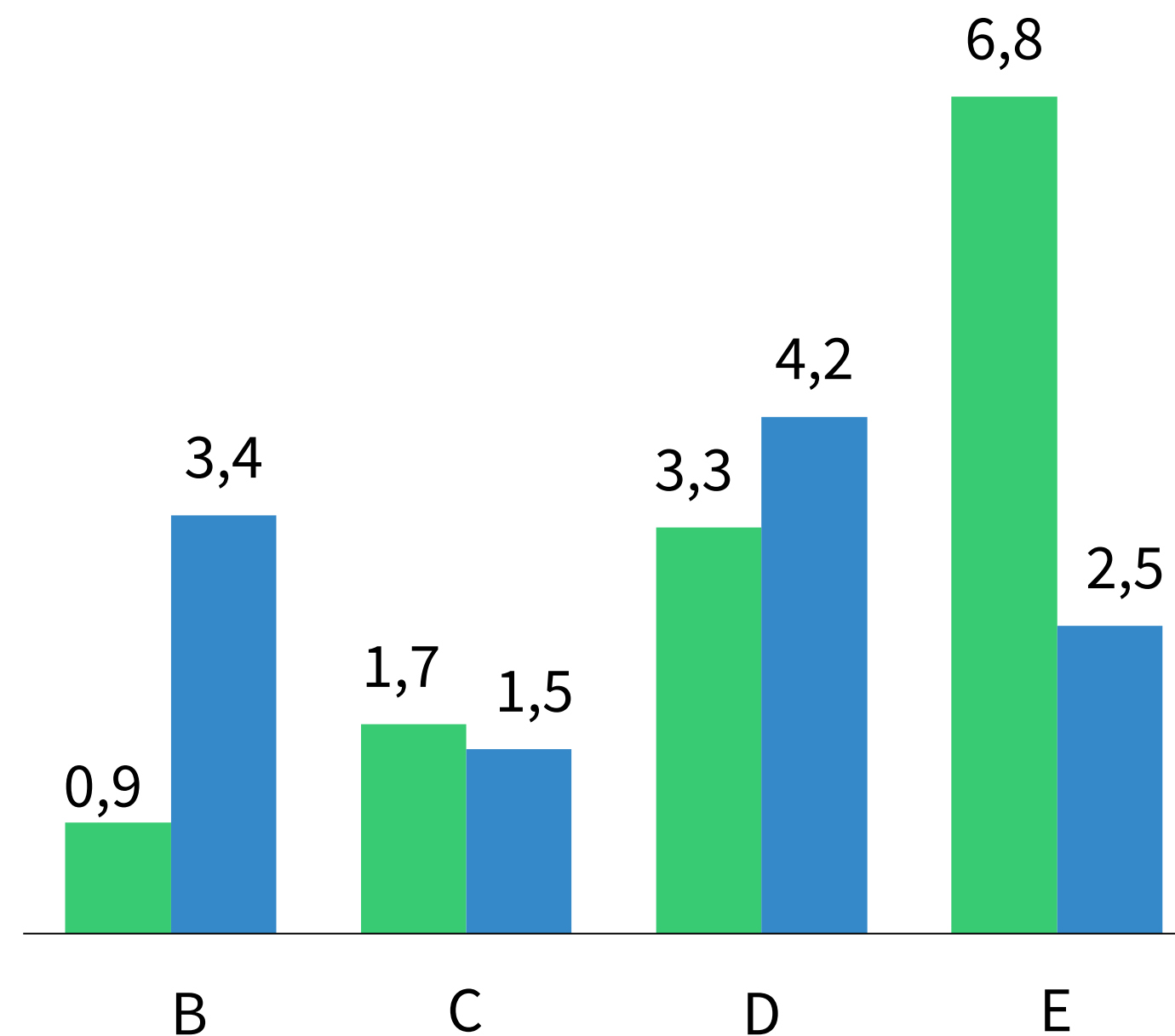
Credit losses before/after BA model application

Percent of loan volume issues, Q1 15 – Q1 17 cohorts*



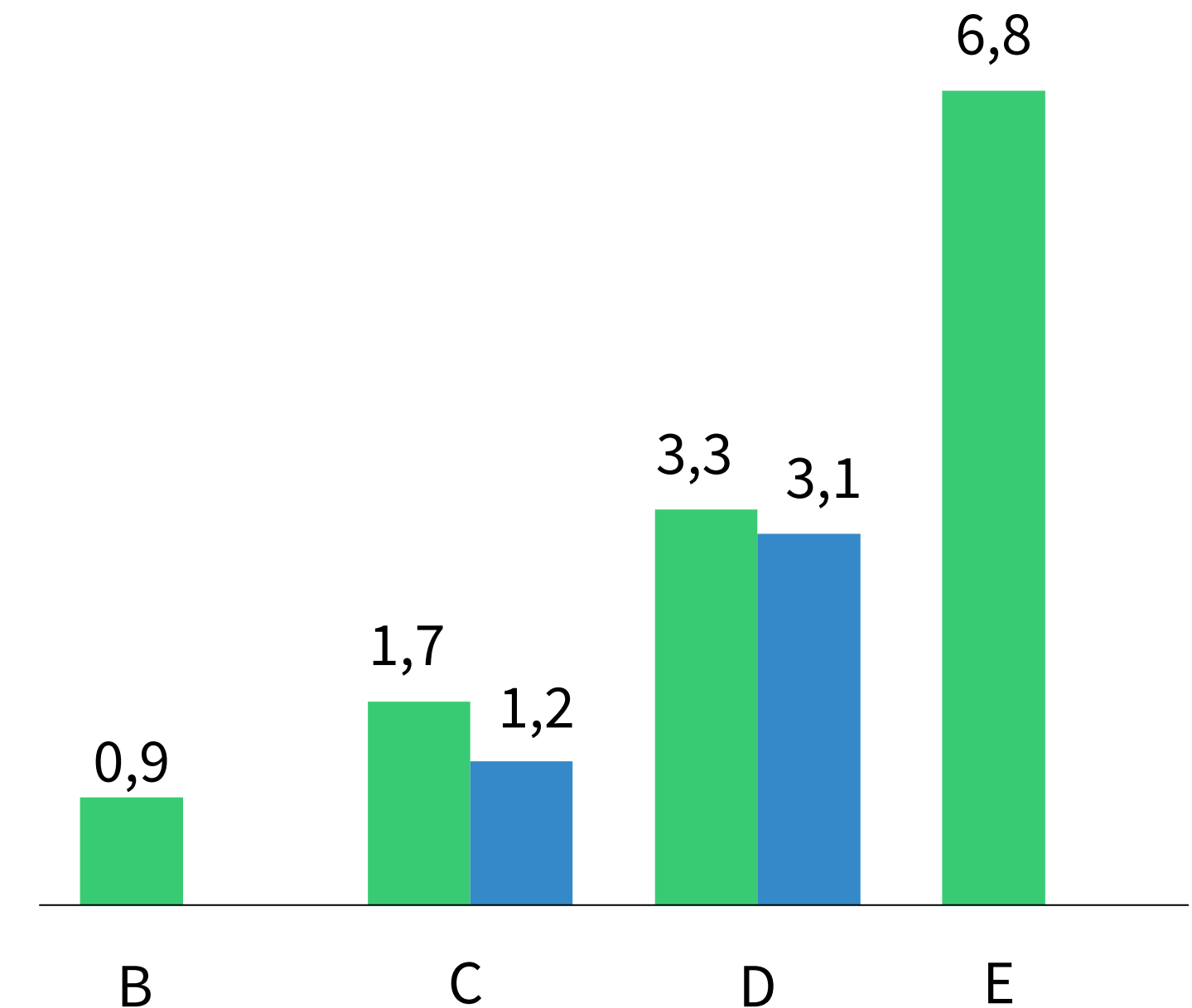
SPoRT Credit Model

Credit Loss: 2.6%¹

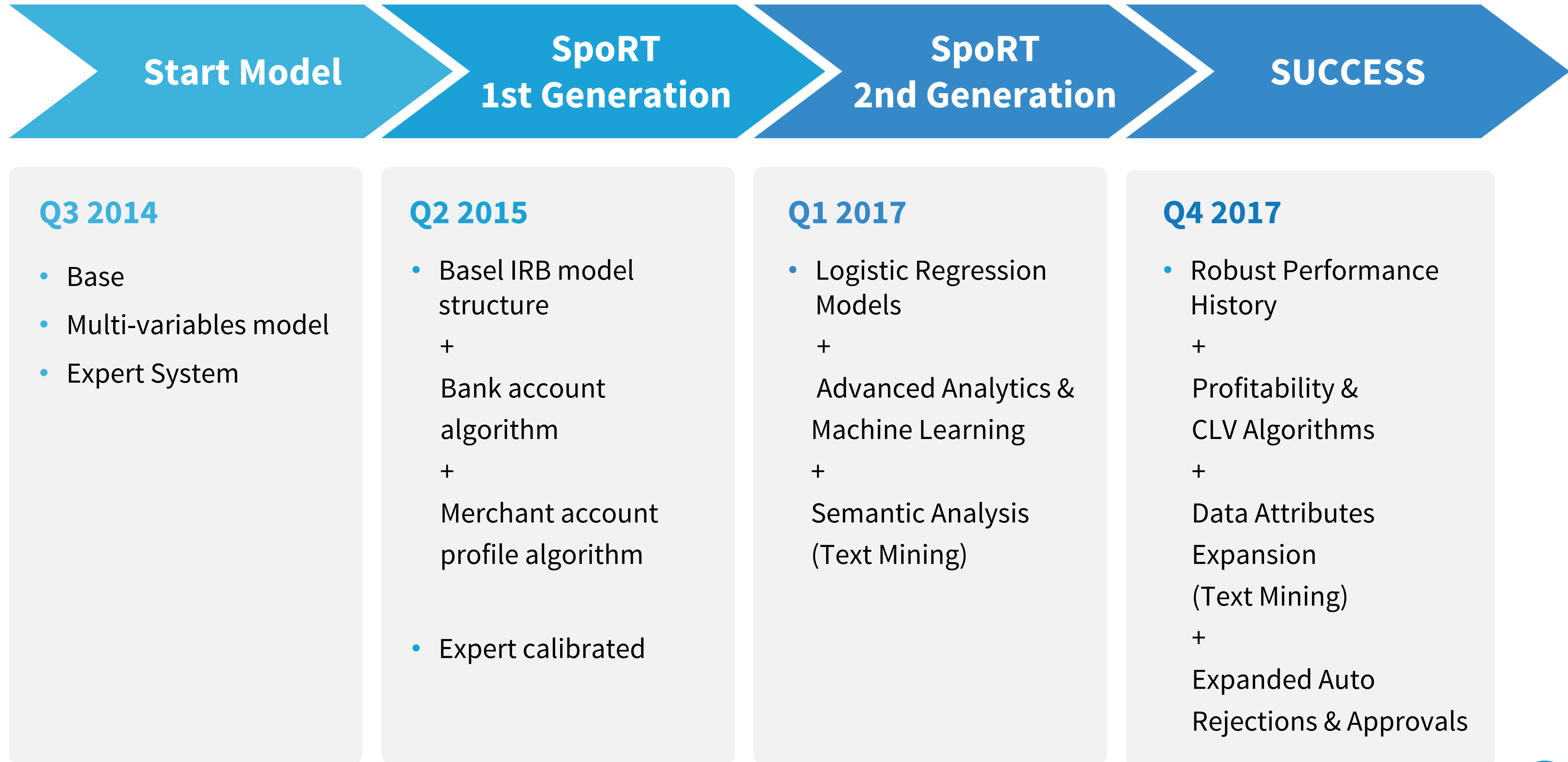


SPoRT Credit & BA Model 2.0

Expected Credit Loss: 1.4%






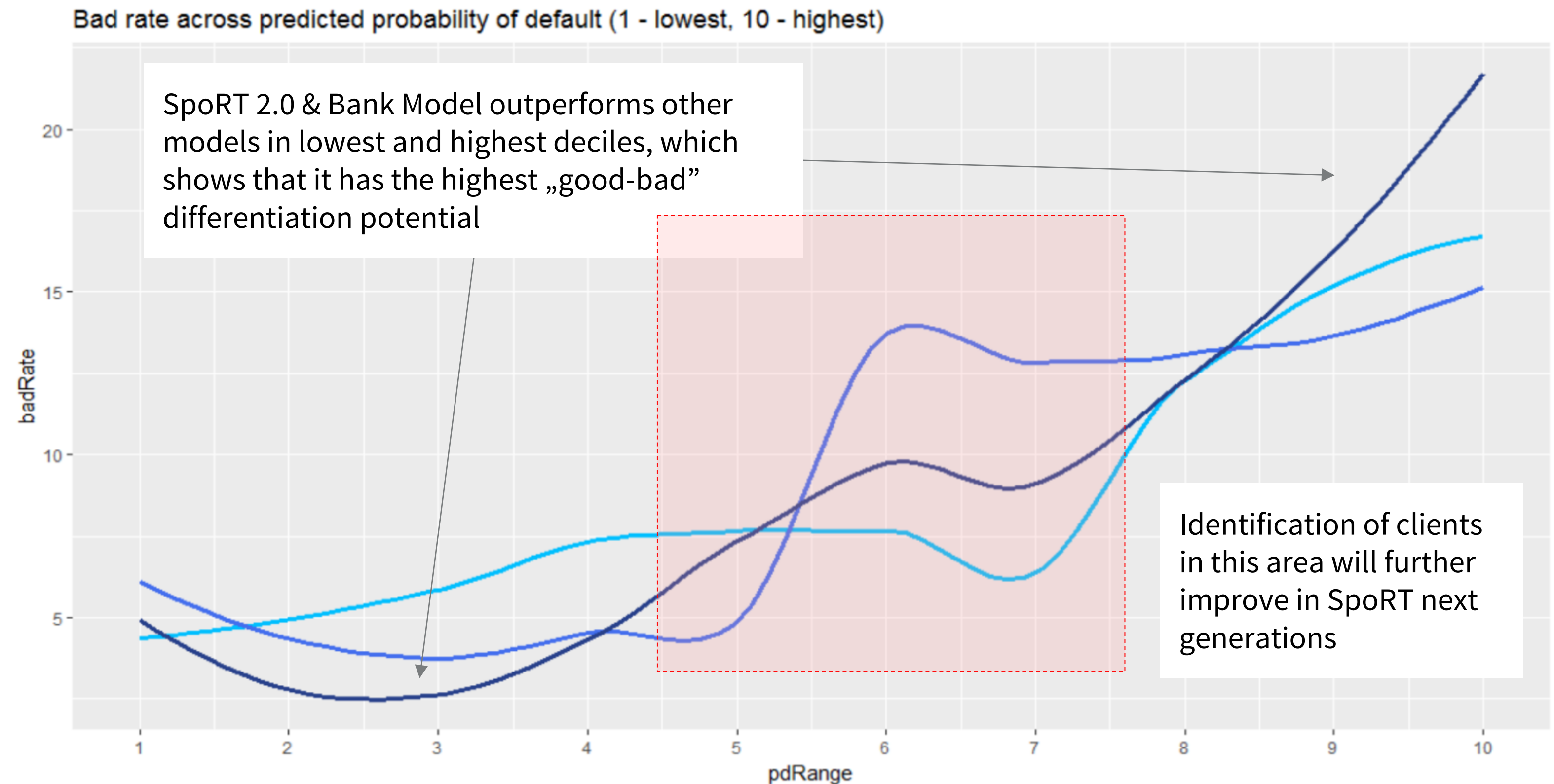
Our models have and will continue to evolve



That evolution has had a significant business impact

SpoRT models are regularly monitored and further developed in order to maximize their predictive capabilities, as well as reflect Spotcap's current risk appetite and application processes

-  – SpoRT 1.0
-  – SpoRT 2.0
-  – SpoRT 2.0 & Bank Model



Thank you.

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