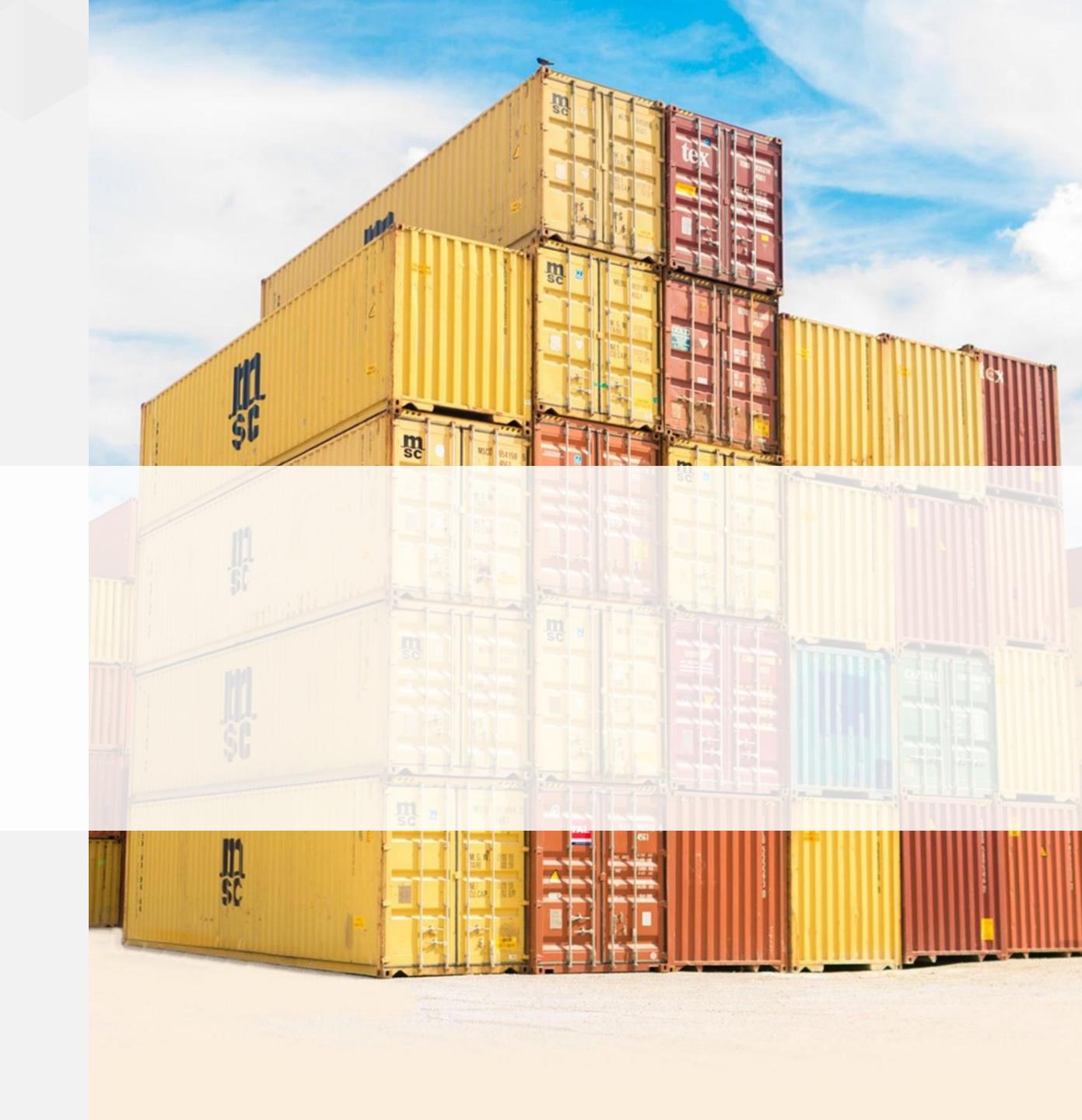


## Technology Roadmap

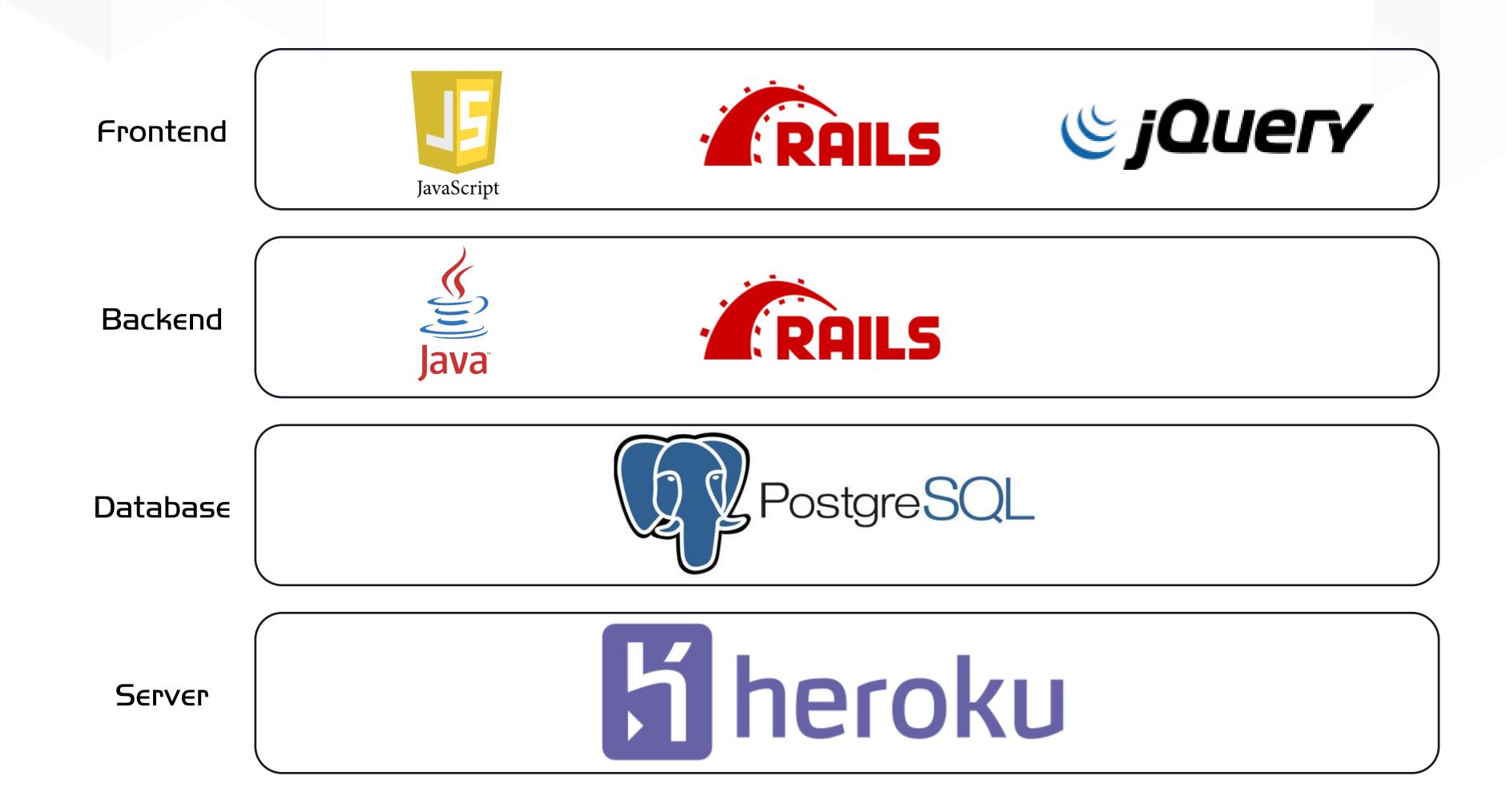
October 2018







We have a clearly defined and state-of-the-art tech-stack, ready for API-integration with banks, ECAs and credit agencies





# We are integrating with EH and Sutor Bank; 2019 we will focus on KYC / Risk model setup and 3<sup>rd</sup> party integration; long-term IoT and Blockchain use cases can be exploited

## Status Quo – MVP

2018

Commercial traction

2019

Scale up 2020/21

Frontend: Java, Rails, JQuery Backend: Java, Rails
Database: PostgreSQL

Server: Heroku

#### EH integration

- Alignment of Click & Cover process
- API-integration for data transmission

### **Sutor Bank**

 API integration for core banking / payments, MaRisk credit application

#### BI / Loan Booking

• Tableau, Exasol, Qlikvieш

#### **KYC**

- Data ingestion from docs via OCR (e.g. Omni, Microsoft Computer Vision, Taggun, Google Cloud Vision)
- Advanced Analytics (Java)
  - Scraper
  - Document similarity scan
  - AML keywords checking
- Using MongoDB for JSON data
- ID verification of relevant natural persons, e.g. IDNow or Gemalto

#### Risk Model

- R or Python
- Exasol
- Al models on SparkCluster
- Use supervised learning algorithms (Random Forest, Ensemble Methods etc.)

#### Securitization / additional Banks

- Java for API-calling
- Launching HandEX APIs

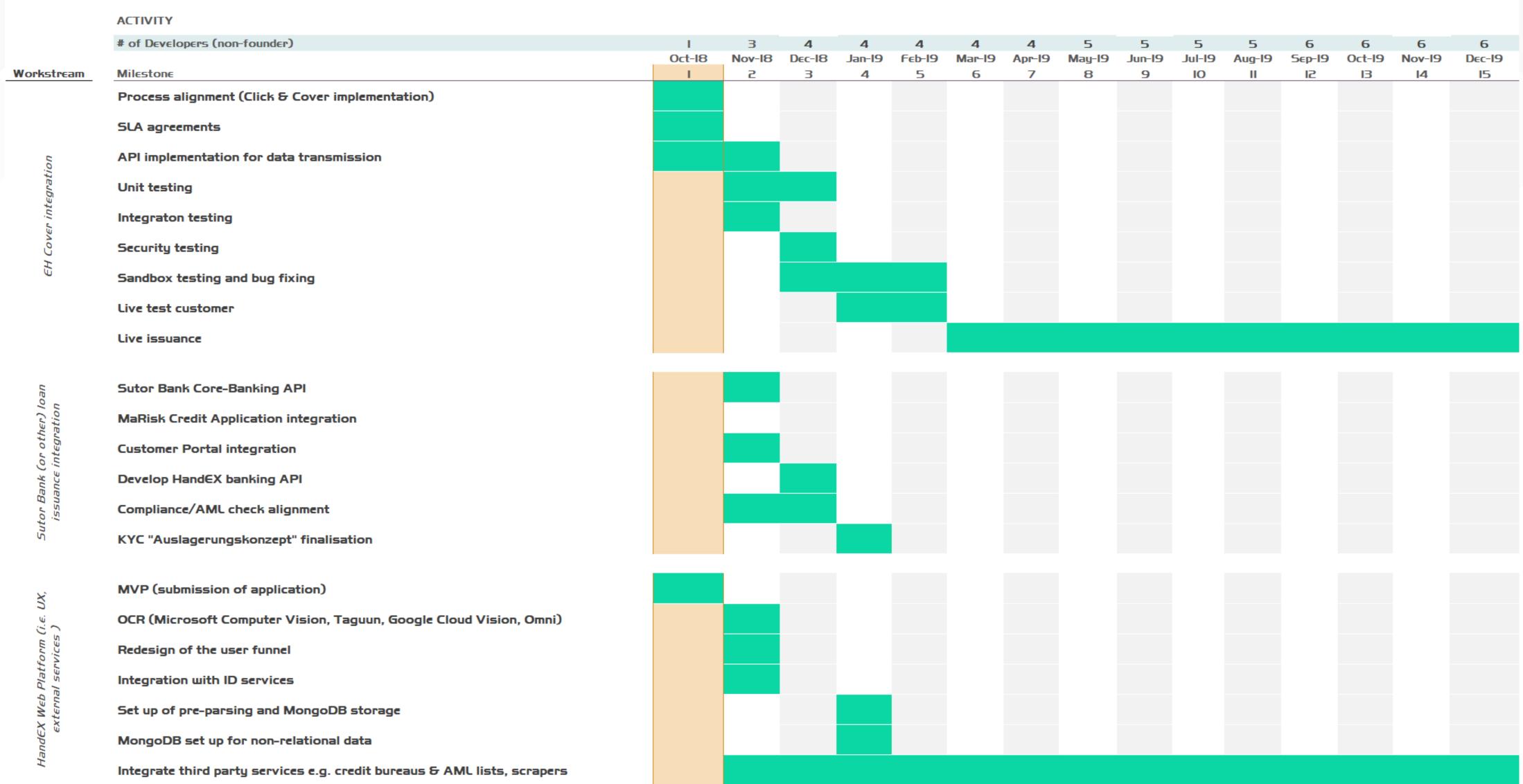
#### External Services, e.g.

- Credit Bureaus (Equifax, etc)
- Maxmind (IP address)
- Local company registers
- United Nations' Sanction List

- Integration of IoT data (e.g. transport data for insurance, real world assets collateralization)
- Blockchain / Distributed
  Ledger for KYC
- Maturation of selfreinforcing risk algorithms (observing loan performance)
- Self-deploying partner integration kit

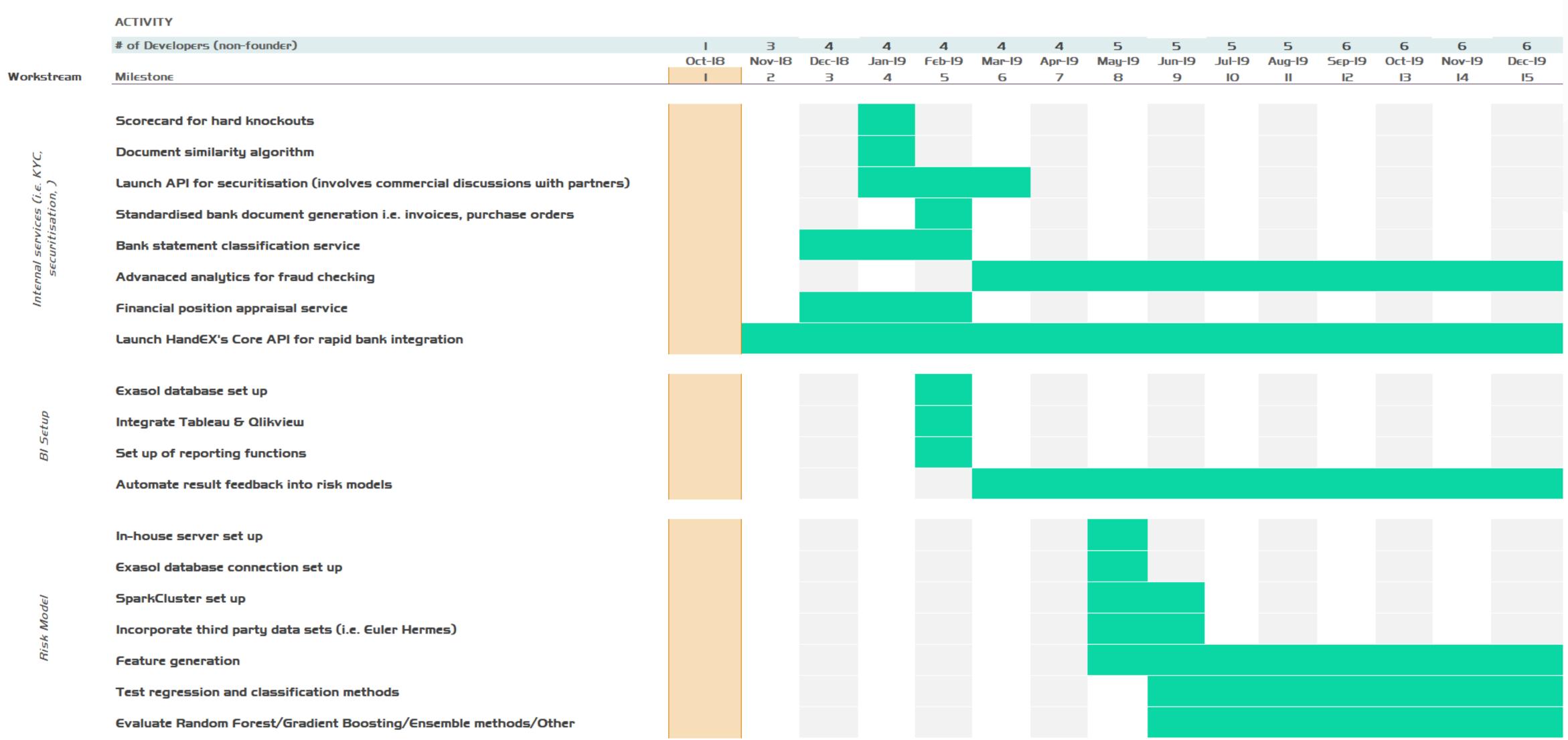


## HandEX Detailed Technical Roadmap to EoY'19





## HandEX Detailed Technical Roadmap to EoY'19







## HandEX utilizes new technologies in order to digitalize all aspects of export finance

New Technologies	Pre-transaction		Transaction processing			After transaction	
	Product selection	Data entry	Workflow management	Document check	Compliance check	Problem resolution	Client mgmt. info system
Optical Character Recognition (OCR)		<b>Text recognition</b> from trade documents to minimize data entry		Check for documents completeness based on transaction/product type	Scrape documents for AML keyword hit		
Artificial Intelligence (AI)	Intelligent and personalized marketing: Offer new product sales or client promotions based on insights on clients' needs and behaviours	Populate fields with text from documents (Integrate OCR with transaction process)		Validate/remediate data with cross- references, machine learning	Contextual filtering: Identify suspicious or unusual activity and	Intelligent problem resolution: Track error rates and flag users in need of remediation	
Advanced Analytics (AA)		Enhanced KYC (e.g., web scrape)	Efficient process and productivity monitoring, and predictive analytics to detect patterns		block suspicious transactions based on predictive indicators		Report enable enhanced <b>Operational</b> and strategic decisions
Robotic Process Automation (RPA)			Bridge data flow and communication: Integrate data from different systems into single interface				
Internet of things (IoT)			<b>Ease of tracking</b> goods and documents; <b>dynamic pricing and financing</b> triggered by shipment  events; <b>automated payments release</b> based on  "smart contracts"			<b>Track document locations:</b> Track goods (location, volume, quality)	
Distributed Ledger Technology (DLT)	Create smart letter or credit as <b>smart contract</b> on DLT —  auto notifications	Replace documentation checks, data entry, validation, with digital record	Real time verification and reconciliation; workflow executed as per smart contract conditions; replace payment and funds transfer with cryptocurrency				

Source: Bain & Company