Amruta Inc

2019

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WHO IS AMRUTA INC?

AMRUTA INC PROVIDES DATA-DRIVEN INSIGHTS AND USER-FRIENDLY SOFTWARE TO IMPROVE REVENUE, PROFITABILITY, SAFETY, COMPLIANCE AND REPUTATION FOR COMMERCIAL AND GOVERNMENTAL CLIENTS, WORLDWIDE.

Amruta Inc is a fast-growing data analytics and artificial intelligence firm offering on premise and cloud based big data and machine learning products and services

Data Engineering

- Build platforms and processes to intake, transform and fuse data

Data Science and Analytics

- Discover important insights, predict, optimize, and make smarter decisions

Model Management

- Deploy machine learning models into the enterprise, in a secured and resilient manner

Artificial Intelligence

- Implement services to optimize business processes on premise or in cloud

We implement software and solutions by integrating business context with technology and data science.

We have been operating for four years. We implemented our platforms at multiple client organizations

Big Data Implementation Platform (Amruta BDIP)

- Data Science and Engineering Pipelines
- Data Services and Business Intelligence
- Data and Information Quality & Governance
- Multi Channel and Device Delivery

Machine Learning Implementation Platform (Amruta MLIP)

- Prediction Models Development and Deployment
- Algorithmic, Network/Latency and Security Performance
- Feature Engineering and Ongoing Business Usage

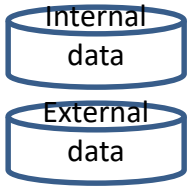
Explainable AI Platform (Amruta XAIP)

- Domain Expertise and Decision Optimization
- Business Decisioning Workflows and Prescriptions
- Decision Narratives and Fairness
- Prediction Transparency

Our software and solutions often result in 5-20 times return on investment.

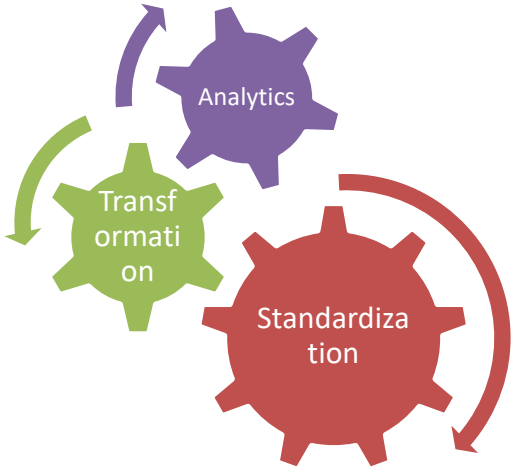
AMRUTA BDIP

Amruta Inc implements data standardization, data transformation, reporting, prediction, and optimization services in enterprise data lakes



HDFS, Hive, HBase, Redis, Cassandra, Mongo DB, MarkLogic – data sinks

JSON, ORC, Parquet, Avro – data formats/structures



Hive QL, Pig Latin, Map Reduce, Storm, Tez, Spark, R, Python, Scala, Hue, SAS, Docker, Kubernetes – data analytics

Tableau, Shiny, AngularJS, Amruta SaaS codebase – data visualizations

RESTful APIs and Micro-services	•Unit and regression test the development code •Integration and system test. Rollout and rollback. Future-proof services
Analytic and Application Governance	•Model monitoring for prediction accuracy and input data stability •Data quality , privacy and security. Application security and delivery
Business Realism	•Customer, Product, Sales and Risk optimization •Business transformation and efficiencies with ROI

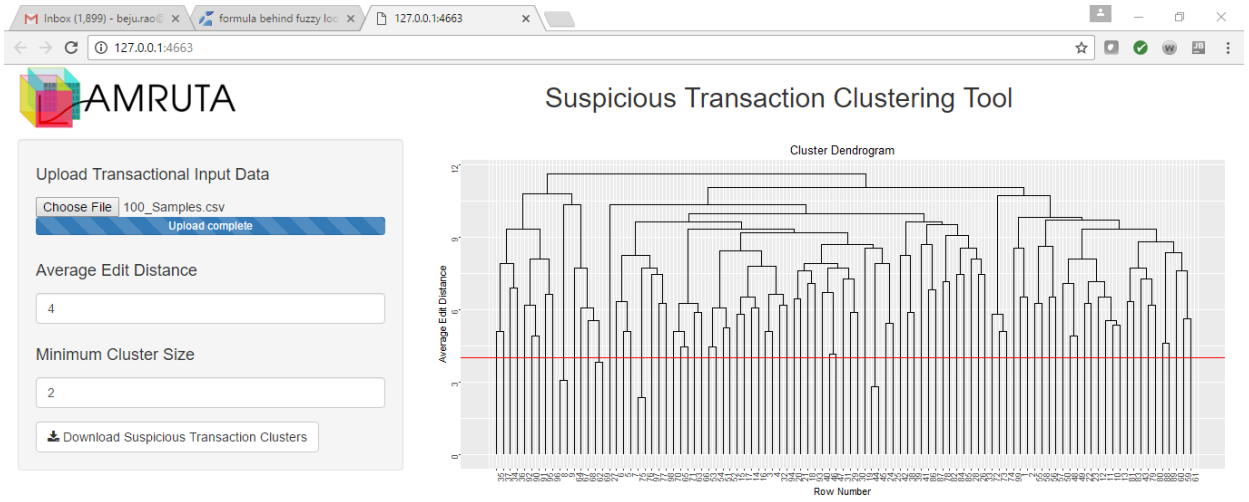
Amruta PaaS Implementation

On-premise Software Implementation

Onsite Staff Augmentation

***Analytic Workflows and Business Processes*.**

Case Study 1: We implemented *Amruta PaaS* to detect fraudulent insurance claims at a carrier with 40 million insured



Similarity threshold is set so that groupings that are in **geo-proximity** less than the threshold (below the line) are matched. There are **four** pairs of matched/**fraud** records, despite non-matching emails*, addresses, and ZIP codes.

Email	Address 1	City	State	ZIP	Enroll_address1	Enroll_city	Enroll_state	Enroll_ZIP
[redacted]	1 Beach 105th St	Rockaway Park	NY	11694-2686	1 BEACH 105TH ST APT 1H	ROCKAWAY PARK	NY	116942686
	1 Beach 105th St	Rockaway Park	NY	11694-2685	1 BEACH 105TH ST APT 12L	ROCKAWAY PARK	NY	116942685
	1 Circle G	Orange	TX	77630	2710 GLACIER DR	PORT ARTHUR	TX	77640
	1 Circle G	Orange	TX	77630-4532	2710 GLACIER DR	PORT ARTHUR	TX	77640
	1 College St	Worcester	MA	01610-2322	820 5TH AVE 1E	MANHATTAN	NY	10065
	1 College St	Worcester	MA	01610-2322	58 REVERE RD	MANHASSET	NY	110302647
	1 Columbus Pl	New York	NY	10019-8225	14111 HEATHERHILL PL	HOUSTON	TX	770771821
	1 Columbus Pl	New York	NY	10019-8225	14111 HEATHERHILL PL	HOUSTON	TX	770771821

*Emails are hidden due to privacy reasons

Case Study 2: We deployed Amruta Inc *staff* to transform telemetry data and to report on device conditions

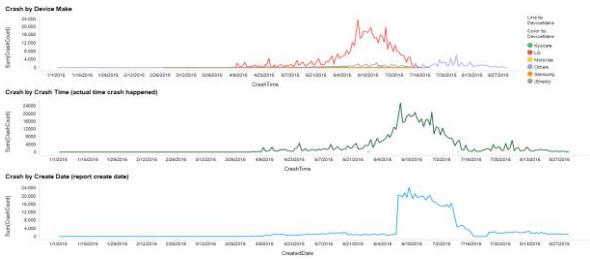

```
{"menu": {
  "id": "file",
  "value": "File",
  "popup": {
    "menuitem": [
      {"value": "New", "onclick": "CreateNewDoc()"},
      {"value": "Open", "onclick": "OpenDoc()"},
      {"value": "Close", "onclick": "CloseDoc()"}
    ]
  }
}}
```


Collect device logs data in **JSON format**

ORC_table name : xxxx_orc_client3
Location: xxxx_Telemetry/xxxreportclient3
Schema: PartitionKey string, CreatedDate string, APP_Name string, BatteryProcessInfoList_PowerInMAs double
sorted & deduped properly:

EndpointID	app_name	DateTime	Power
123	abc	20150401:01:02:03	5
123	abc	20150401:01:02:05	6
123	def	20150402:02:03:04	7
123	def	20150402:03:03:04	3

Transform logs into **ORC and Parquet Hive/HBase** tables with defined **schemas.**
Standardize the data in Tables



Use the standardized data to generate **BI reports and data visualizations**

A ***team of data architects, engineers, scientists and analysts*** worked to develop APIs/micro-services to support product and risk analytics spanning customer notifications, device diagnostics, claim assessments, and policy renewals.

*Emails are hidden due to privacy reasons

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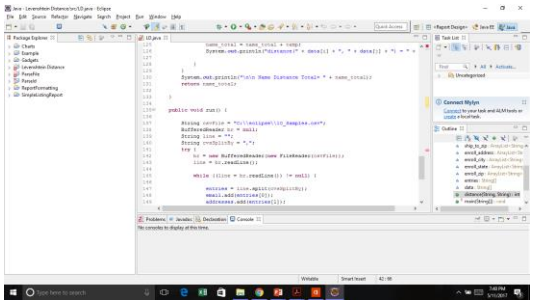
Case Study 3: We *implemented* Amruta Inc's *codebase* to validate name and transactions screening in financial crimes compliance

```
import java.util.List;
public class TextFileParser {
            public static int
i=0,openIndex=0;
            public static
StringBuffer sb = new
StringBuffer();
            public static void
main(String[] args){ ….
```

Develop codebase to generate customer profiles and trade & payment transactions, covering sanctioned and prohibited entities



Implement the software in client infrastructure, ensuring the right hardware (RAM size) and software (SDK and IDE) provisioning

Finding 1: In 10% of accounts from country xxxx, last name is missing. This resulted in 23 accounts for prohibited entities

Finding 2: Determined 18 scenarios of trade and payments in which misspelling of names would allow transactions involving blocked/prohibited entities and vessels. These scenarios correspond to non-Latin languages

Iteratively run the screening software to compile the customer and transaction screening effectiveness

Validation involved ***installation of codebase, integration with client's software, and iterative testing*** of the screening results. Opportunities to improve data collection and name/transaction screening effectiveness were identified.

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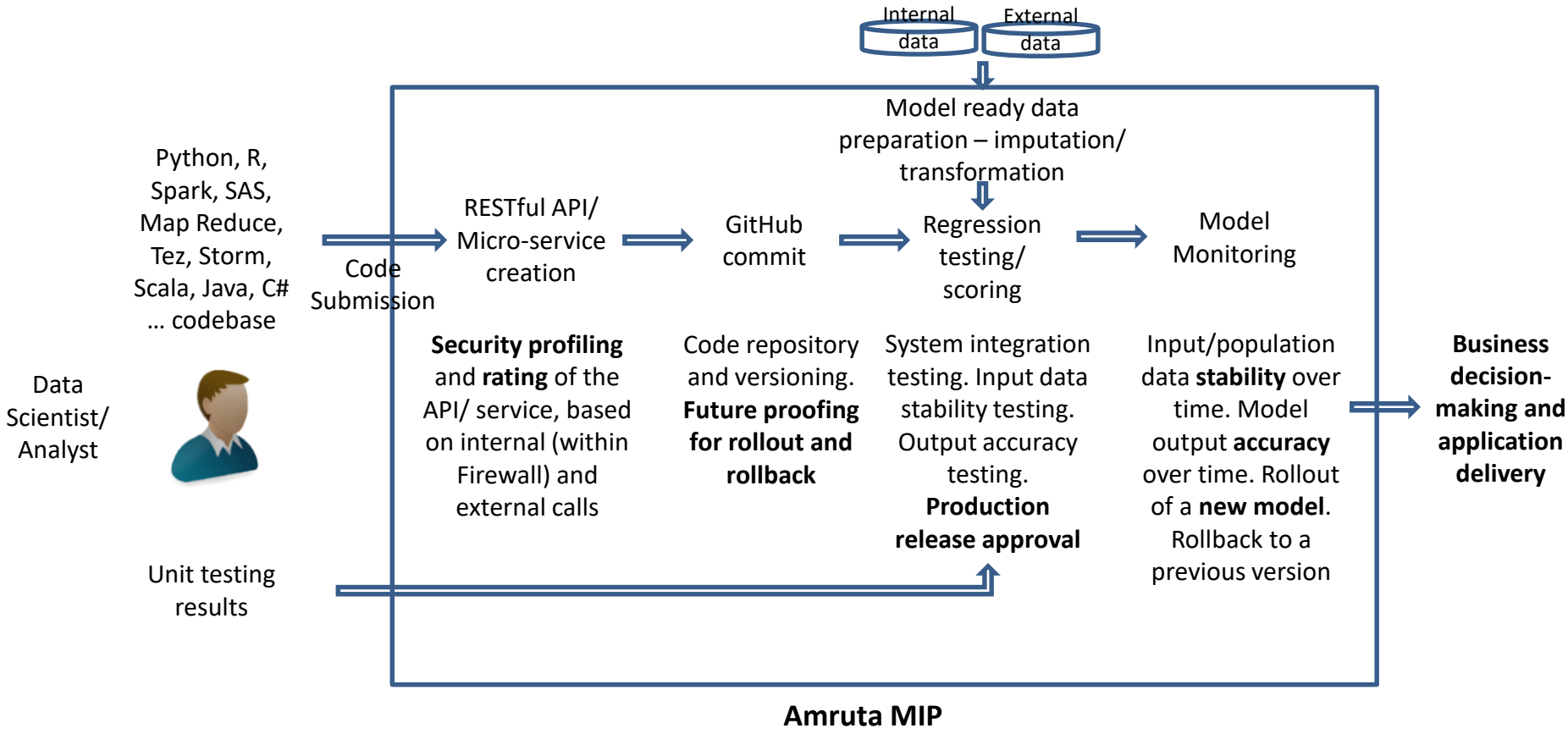
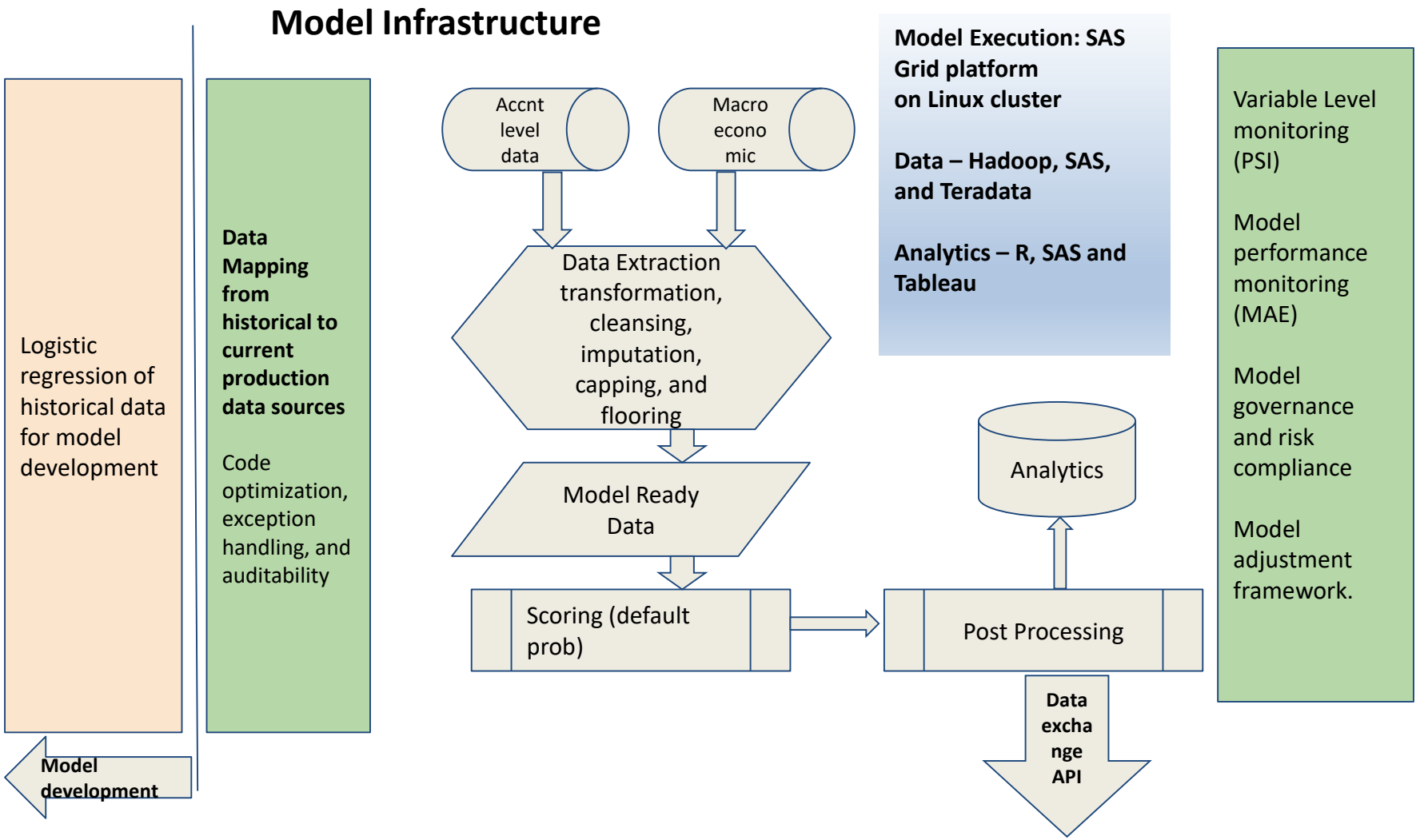
AMRUTA MLIP

Amruta Inc's Machine Learning Platform facilitates *end-to-end data analytic processes* to support business decisions

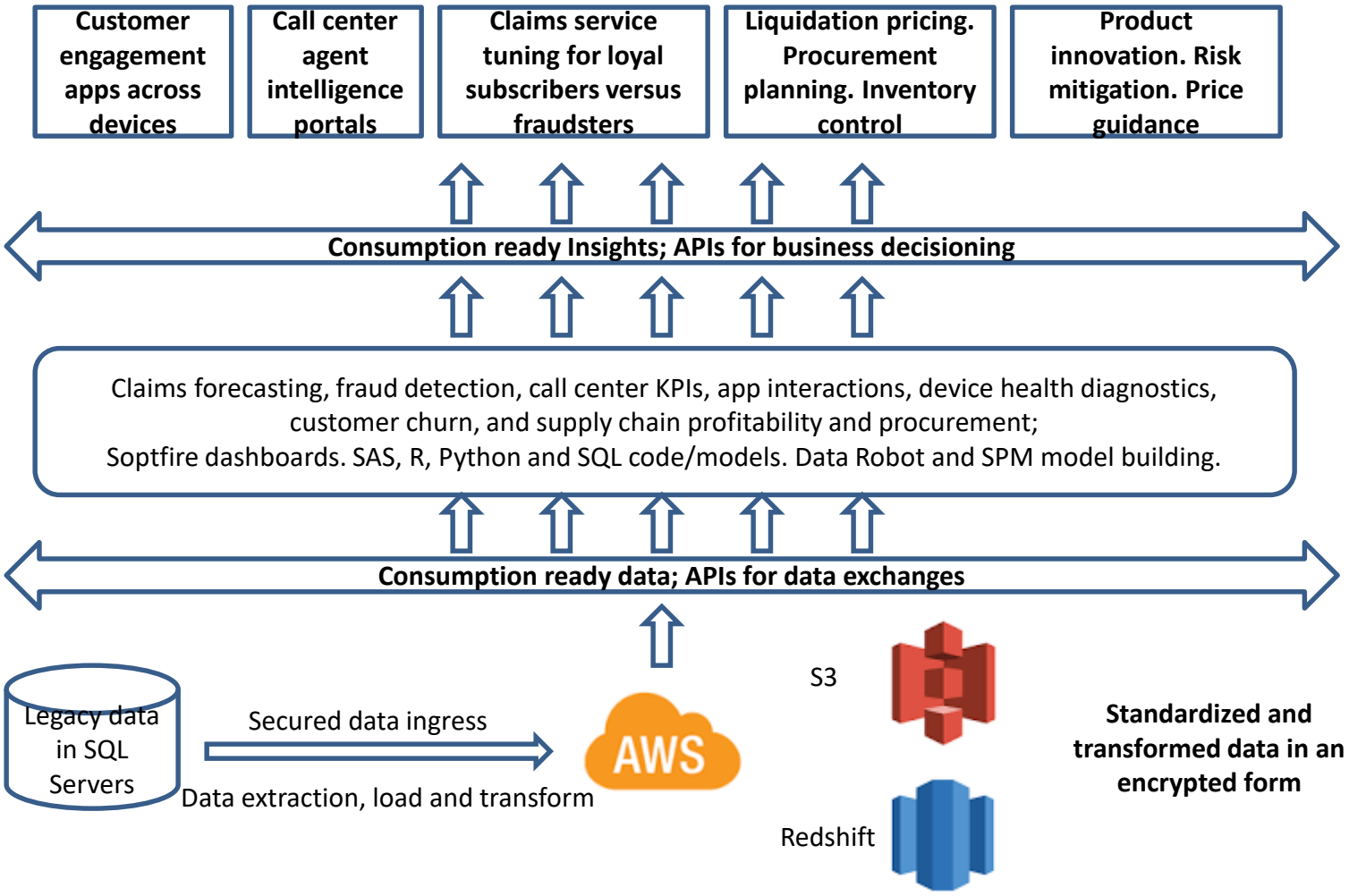


We ***implement*** Amruta MLIP ***on premise and in cloud***, using staff augmentation and project delivery methods.

Case Study 4: We implemented Amruta MLIP for Basel III Compliance for a large Bank

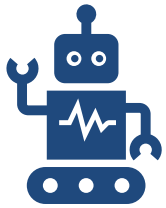


Case Study 5: We are implementing Amruta MLIP at a large Insurer as they move from on premise to AWS cloud



AMRUTA XAIP

Big data and Cloud/Hadoop computing facilitate a wide rage of machine and deep learning applications



ML techniques such as **Random Forest, Gradient Boosted Trees, and Support Vector Machines** as well as deep learning/artificial intelligence (AI) techniques such as **Convolutional Nets, Auto Encoders, and Long-Short Term Models** can enable highly accurate predictions

The improved predictions are in turn resulting in more effective business decisions across **fraud detection, customer identification and engagement, and asymmetric risk identification, among others**

Corporate and governmental users ask for reasons behind the ML and AI predictions.

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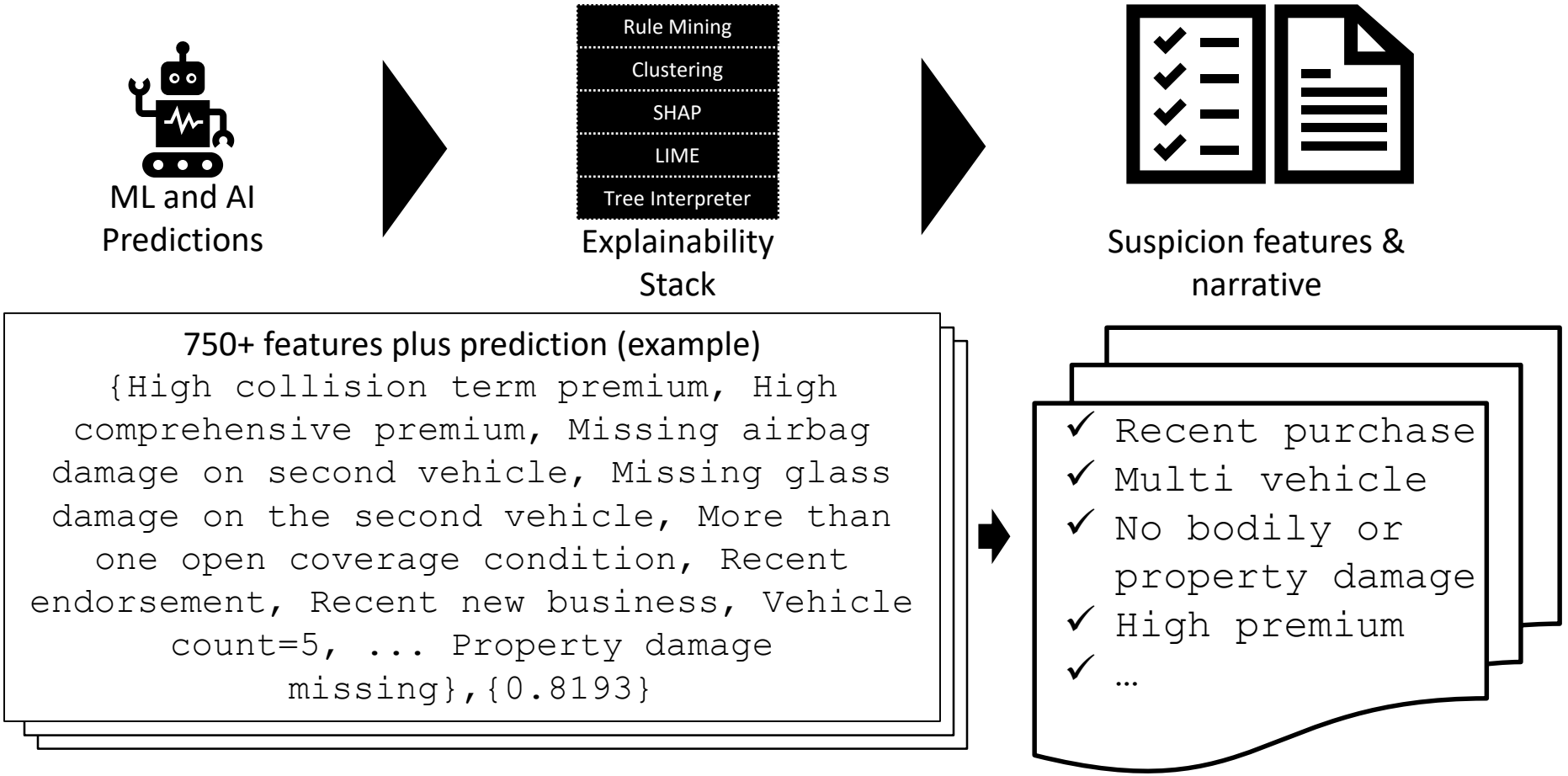
Case Study 6: When investigators wanted reasons behind our system's insurance claim fraud predictions, we provided a rationale



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