

Acronis®

NEW GENERATION DATA PROTECTION



Smart Nation meets privacy-preserving analytics

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Agenda

Problem and Objective

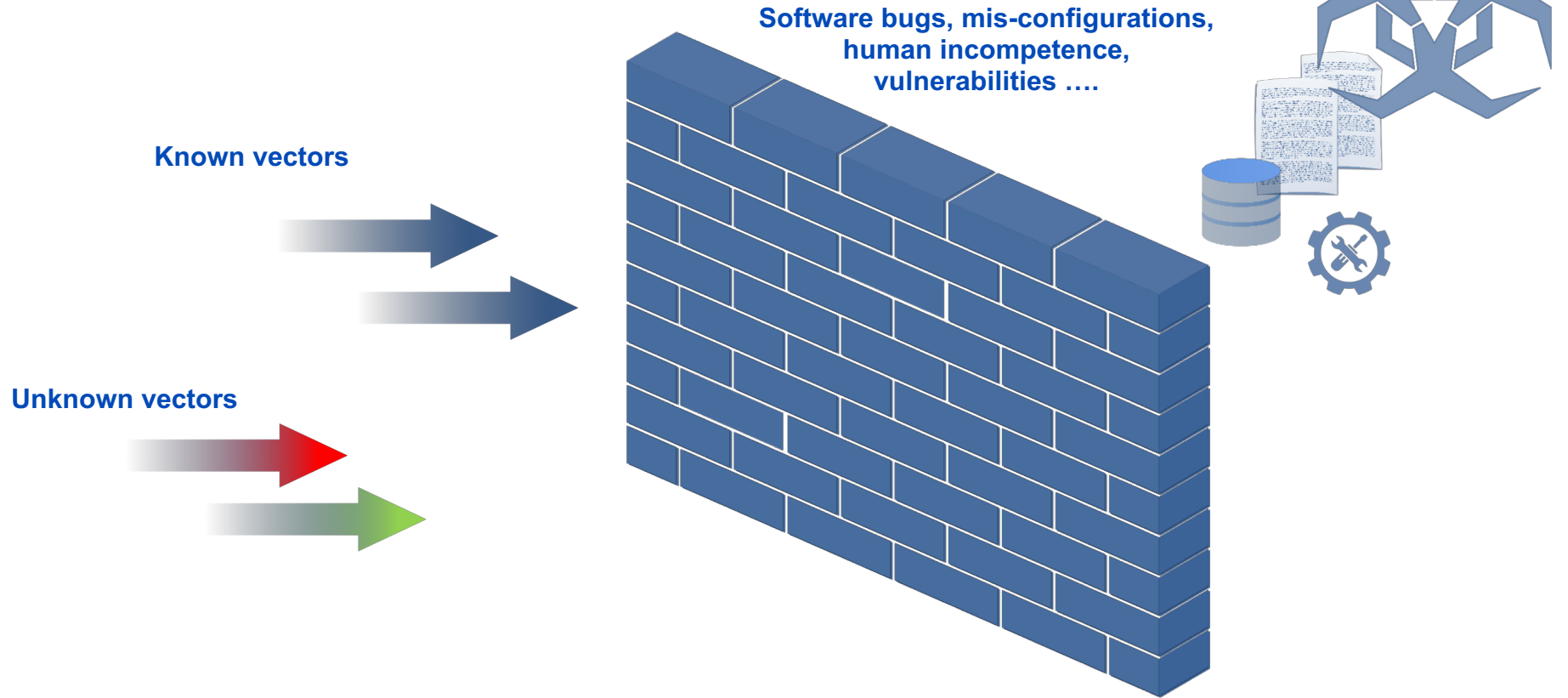
Our Innovation

Value Proposition

Singapore & the World



Attack vs Defense



Data and Hope



So much data.....so little insights

Distrust
No trusted framework for collaborative work among partners, contractors, vendors, ISV and service providers

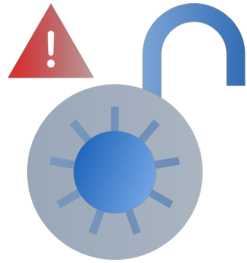
Malicious entities
Vanhacry, Mir,
Kovter.....an ever expanding soup of malwares and related actors.

JOIN without REVEALING !!



The Problem

How to securely combine, aggregate and analyze data from disparate sources to reveal insights that are hidden otherwise?



Sharing sensitive data as-is is **too risky** and often illegal



Encrypted data with off-the-shelf cyber security products is **useless for analysis**



Objective

Singapore's vision for a Smart nation mandates data-driven planning and forecasting

“A collaborative data analysis platform that guarantees data security and privacy in the absence of mutual trust facilitates this vision.”

Such a platform will have direct application for: Finance / Banking / Insurance, Threat Intelligence, Healthcare, Government Agencies.

DATA for COMPUTE



From: Need to Open

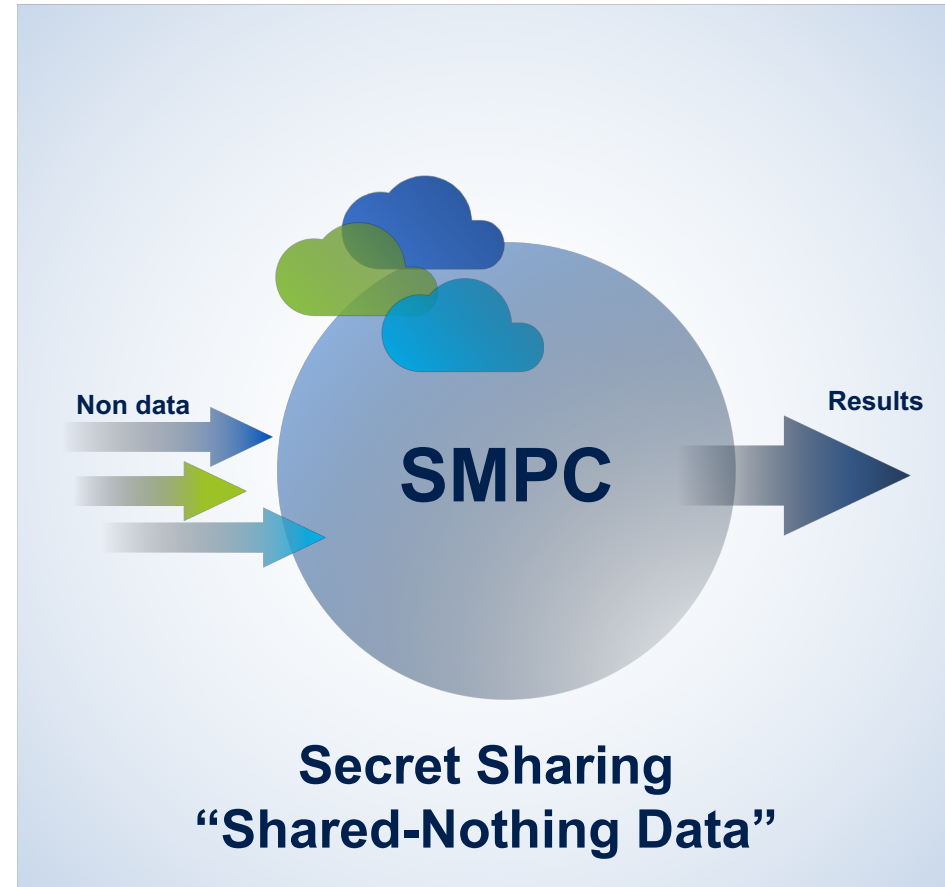
To: Keep it Closed

The Solution.

Secure Multi-Party Computation (SMPC)

Enabler of seamless data integration between variety of organization without risk of privacy breach – a key requirement of Smart Nation development

- SMPC guarantees that none of the parties learn the inputs
- SMPC gives everybody the aggregated output of computation
- SMPC is able to operate with malicious agents in the system
- SMPC is **key-less** unlike homomorphic systems



Data submission from multiple parties

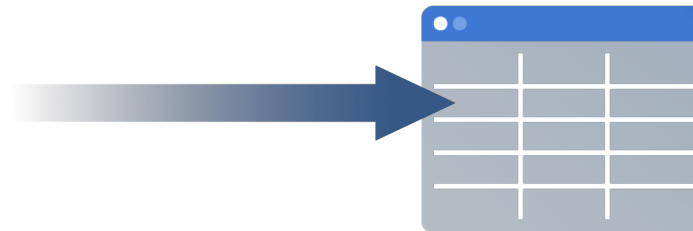
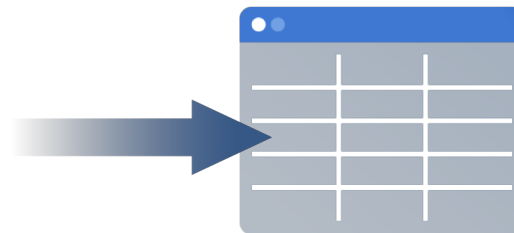
Financial organizations



Health care organizations



Anonymization process

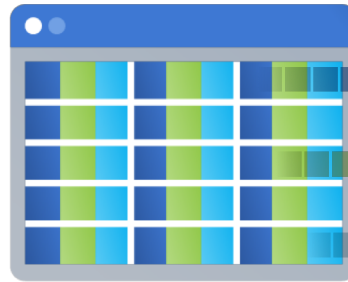


Data splitting into shares

Every cell is split into secret shares



Transferring all shares to Secure Engines



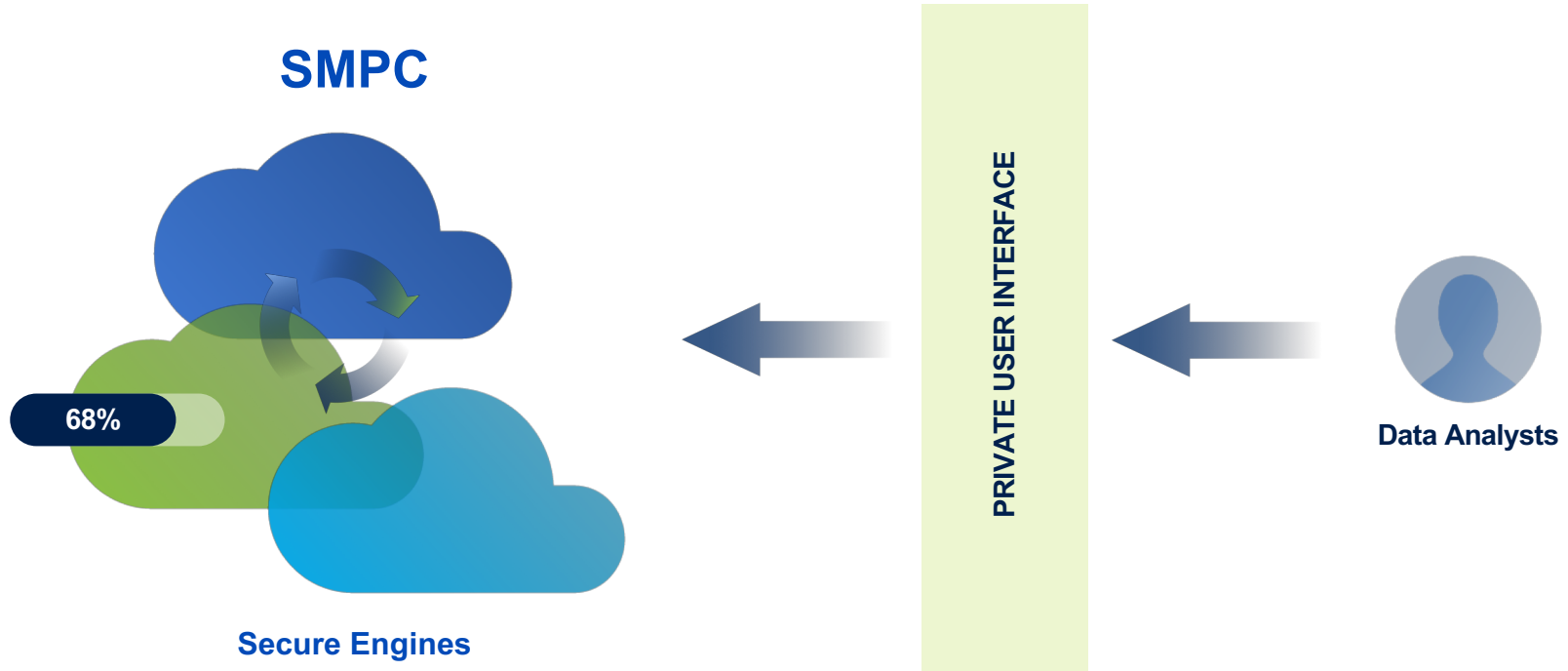
SMPC



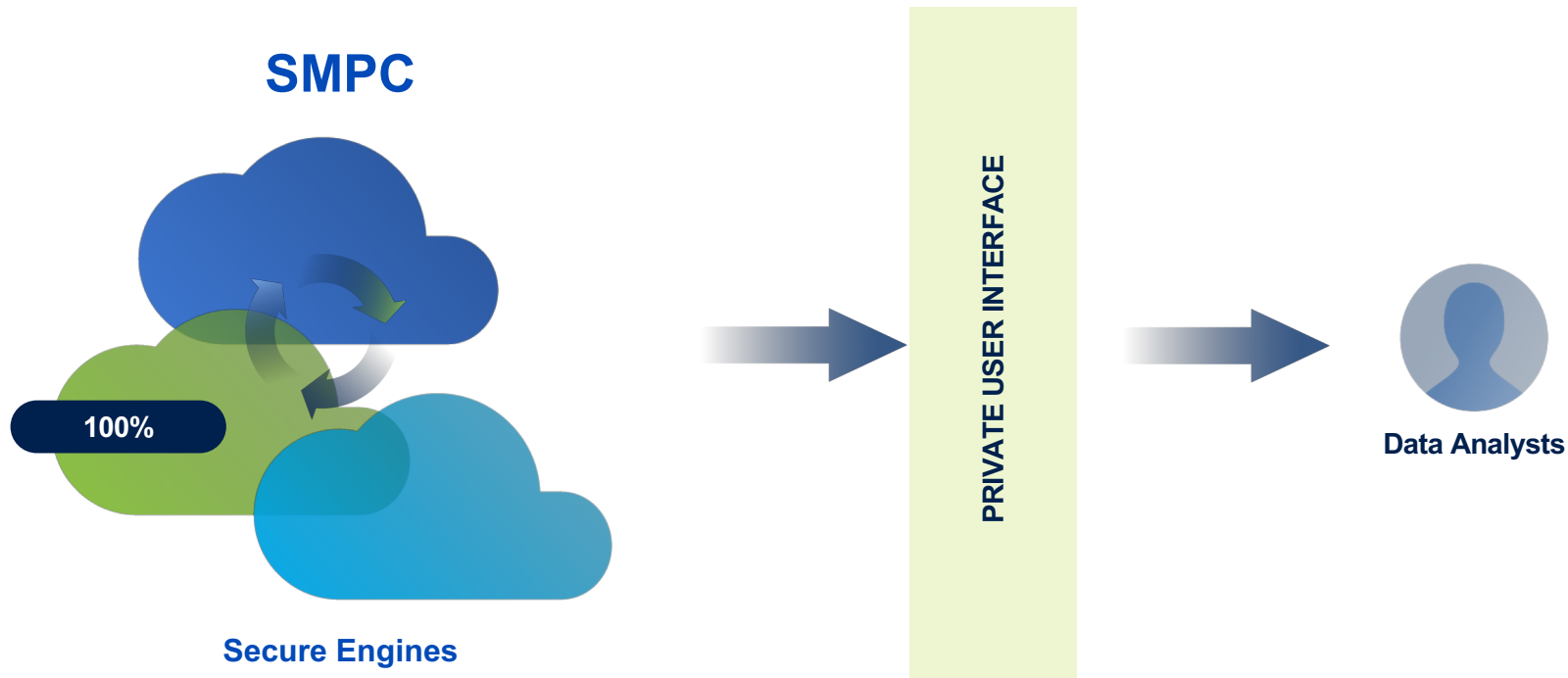
Multi-cloud/ On-prem Secure Engines

No one party learns the actual data

Query parameters submission



Results retrieval



Platform Actors



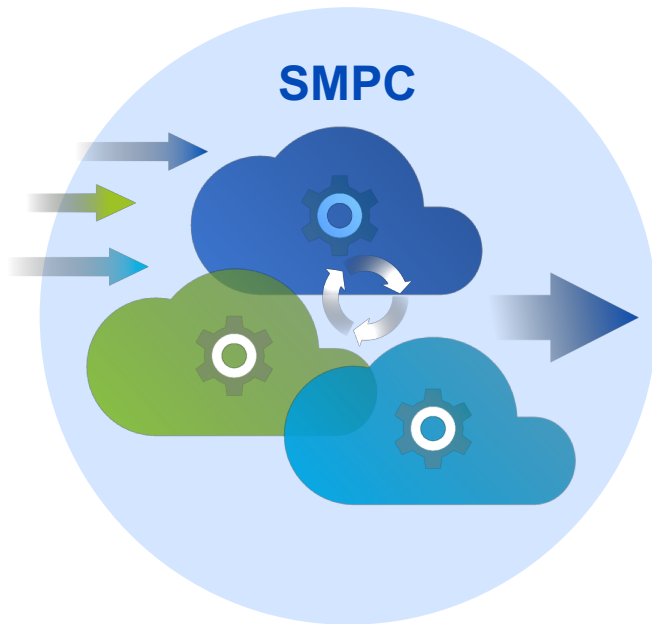
Data Sources

Entities / individuals who are generators and providers of data



Data Contributors

Businesses / companies who collect and store data from the sources and contribute them for aggregate analysis/study



The Platform (SMPC)

The medium where the contributed data is being aggregated and analysed as per requests of the Data Queries



Data Querying Party

Government agencies or authorized organizations that are analyzing the aggregated data in order to produce value for the people in the country

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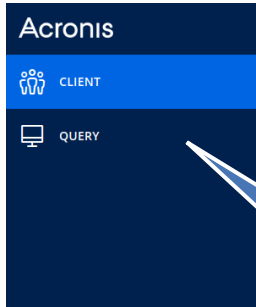
NEW GENERATION DATA PROTECTION



Acronis SMPC Trial Platform

Acronis Singapore R&D Centre

Acronis SMPC Trial Platform



SMPC

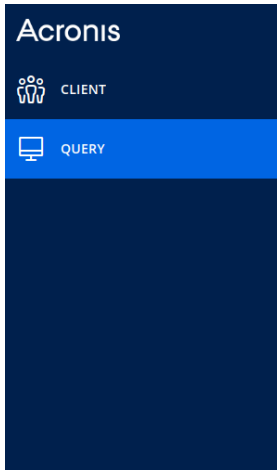


Submit data to SMPC engine below

Select a CSV file to upload Browse

Multiple input parties

Secure and anonymized data submission



SMPC



Submit queries to SMPC engine below

Report Generation Ad-hoc Querying

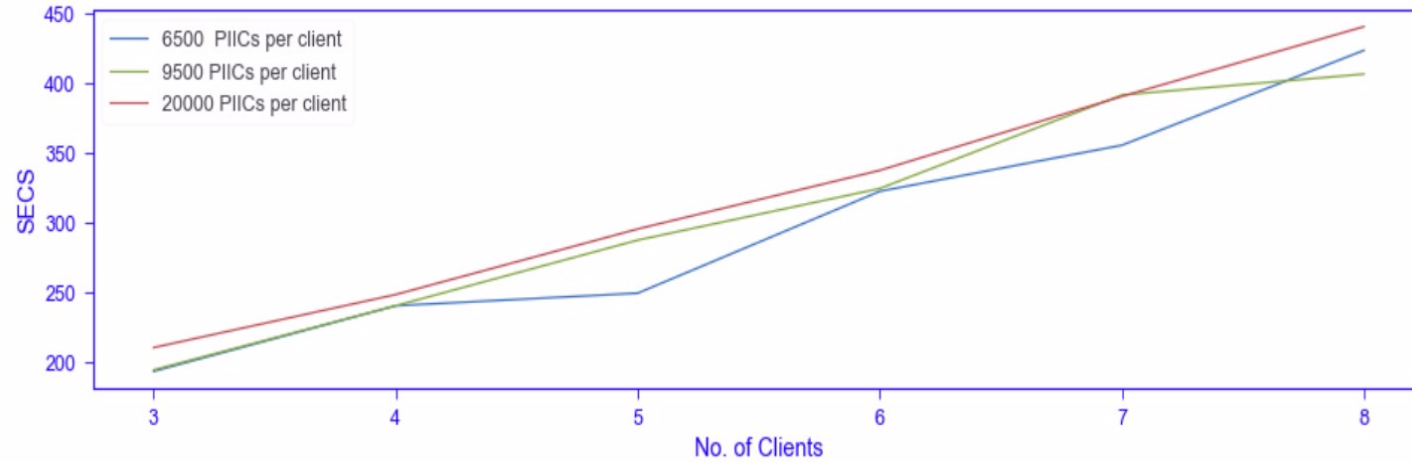
Type of query
Percentile of Savings (Inner join)

- Percentile of Savings (Inner join)
- Percentile of Savings (Outer join)
- Mean Term Insurance
- Count based Income tax

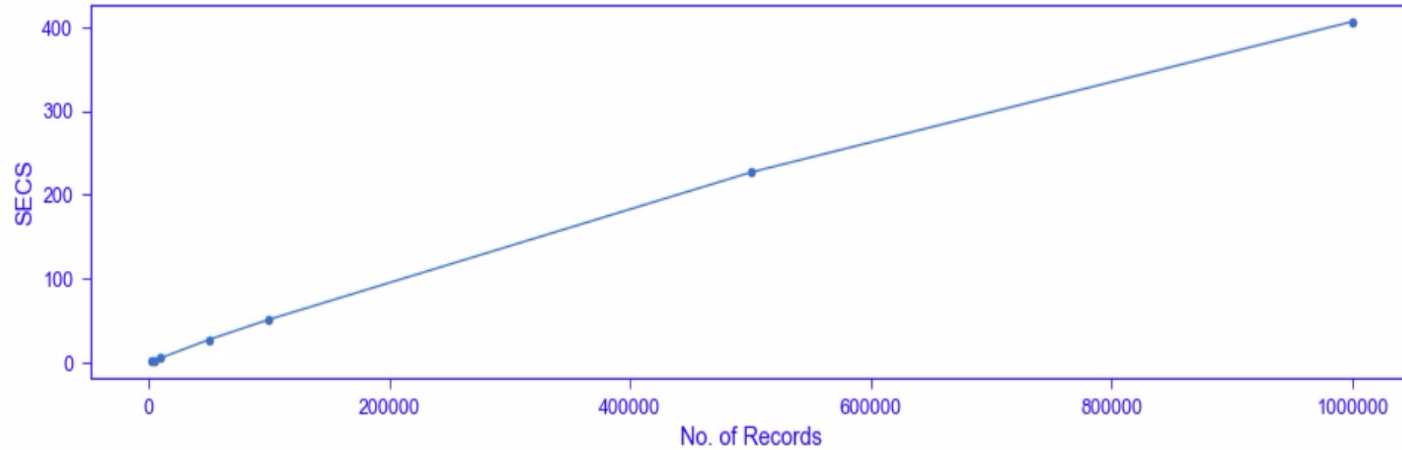
Secure compute on joined data



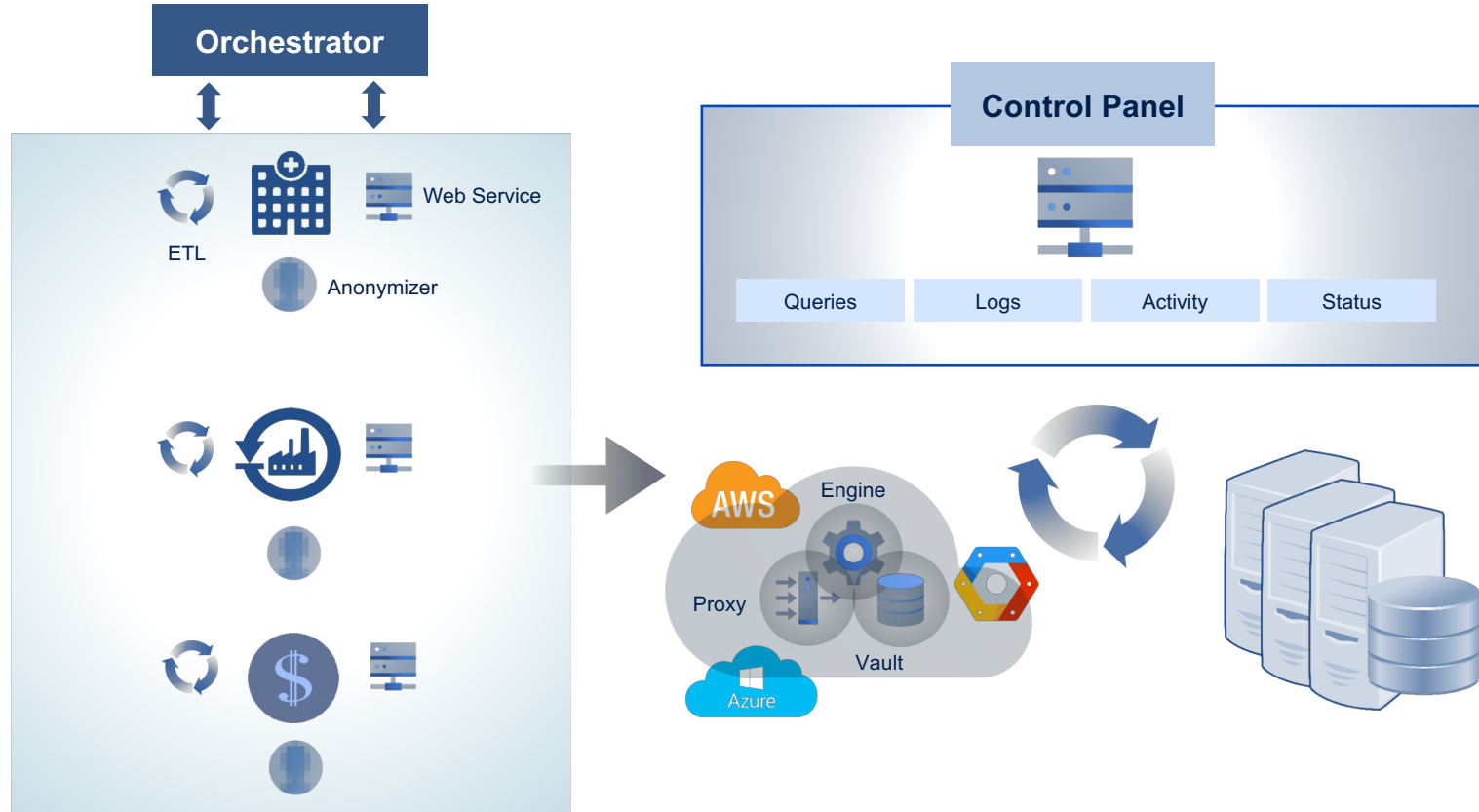
Platform performance



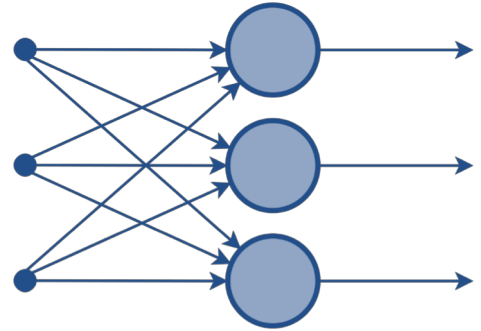
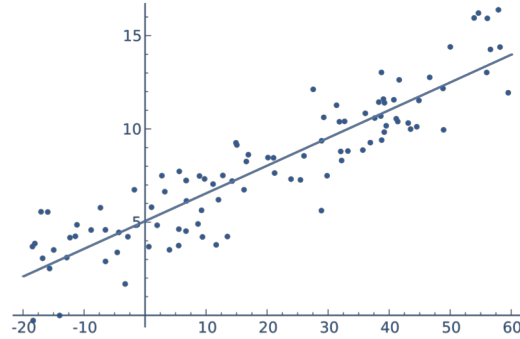
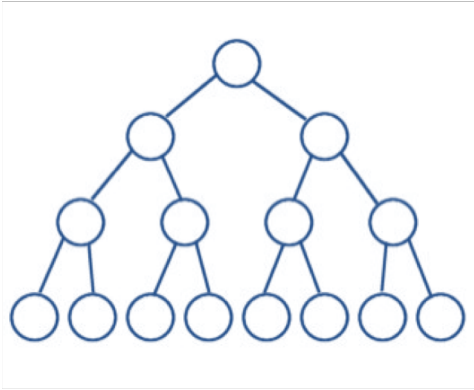
Platform performance



Platform architecture



“Secure – Private” Analytics



Secure Advanced Analytics

Classification, Regression, Neural nets and many more.

The Value Proposition



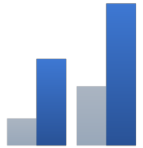
Deep insights

- Data driven policy and decision making.
- Improved visibility and execution of programs.



Monetization

- Unlock new streams of revenue and profitability from data you already own.
- Quicker ROI



Competitive advantage

- Leverage right information at right time.
- Data driven marketing.



Regulation and compliance

GDPR, PDPA.

Beneficiaries:

Governments and state bodies • Banks, insurance and financial institutions • Medical and healthcare players
• Research and academia • Retail and consumer • and many more...

SMPC stories from the world!



EU

Students and Taxes correlation study

Estonian Center of Applied Research

10 Million+ records from two mutually exclusive govt. agencies:
Aggregation and statistical analysis with privacy.

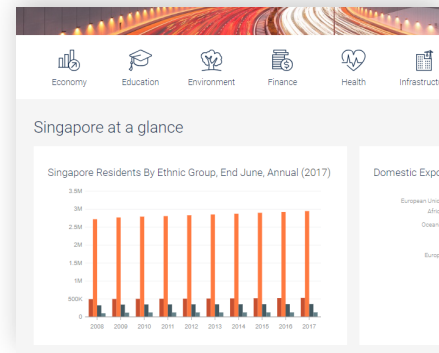


EU

Payroll processing on public cloud

Ministry of Finance of Malta (MFIN)

Collaborative processing of data from taxpayers, employers, banks and SMEs on public cloud with guarantees on confidentiality and privacy.



USA

Government programs

Evidence-Based Policymaking

Increase availability and use of data in to build evidence about government programs, while protecting privacy and confidentiality.



Potential adopters in Singapore



Work with us!



Collaborators | Partners | Trials | Demos

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