NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

School of Computer Science and Engineering
College of Engineering

Privacy-Preserving Knowledge Graph Merging

A technique to mitigate data silos in organisations

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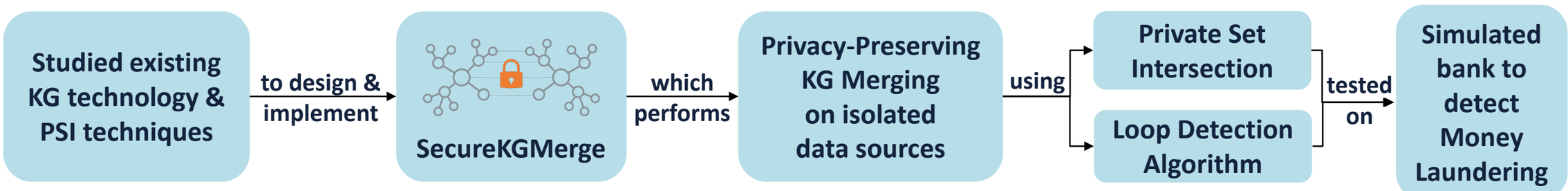
Project Objective:

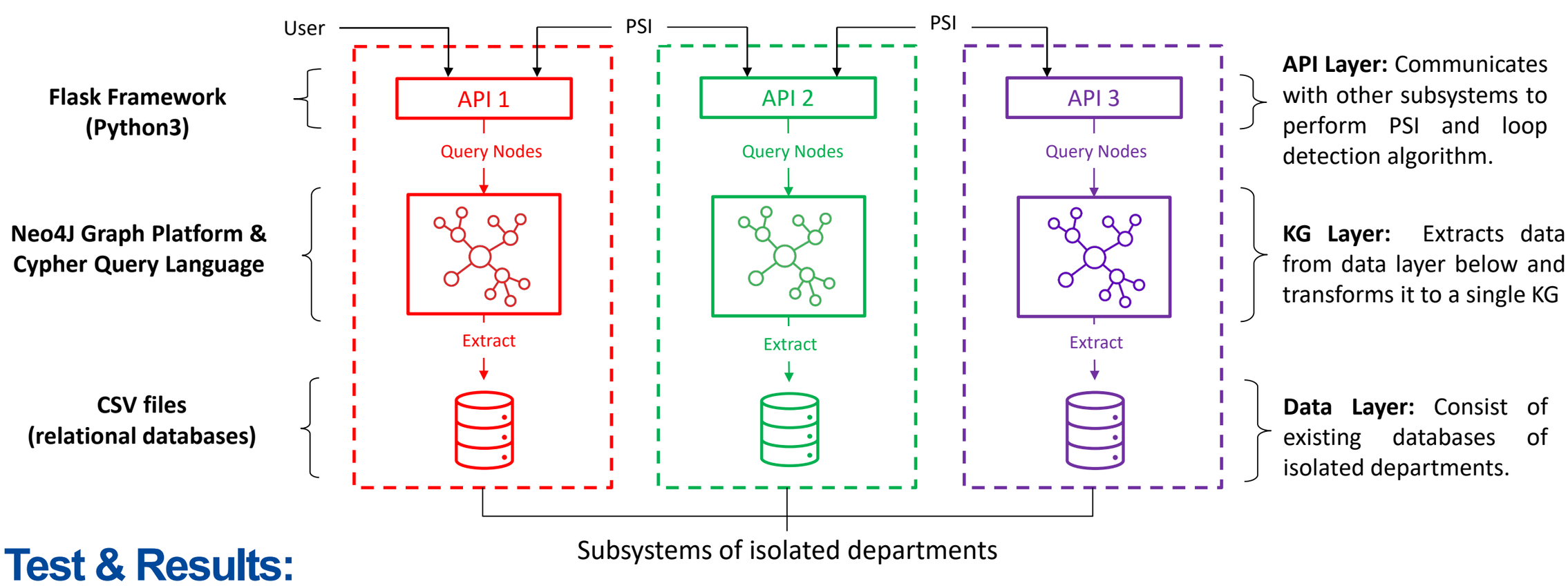
Knowledge Graphs (KGs) have gained popularity in recent years for their ability to support rich data services. However, the benefits of KGs are limited by the data silos within organizations. Private Set Intersection is a possible solution that allows these data silos to calculate their common entities without revealing any other information. In this project, we aim to determine the sufficiency of Private Set Intersection to perform Privacy-Preserving Knowledge Graph Merging.

Pipeline:



Design and Implementation:

Design for an organization with 3 isolated departments.



Test & Results:

SecureKGMerge was tested in a simulated bank scenario (Keep Safe Retail Bank) consisting of 3 isolated departments (Credit Card Payment, Remittance, Local Bank Transfer). SecureKGMerge was successfully able to detect the simulated money laundering activities hidden in the isolated data sources. Therefore, proving the sufficiency of PSI to perform Privacy-Preserving KG merging.

Credit Card Payment KG	Remittance KG	Local Bank Transfers KG	Merged View