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ACCELERATED GRAPH ANALYTICS TO ANSWER COMPLEX BUSINESS QUESTIONS

THROUGH FASTER, DEEPER, AND WIDER INSIGHTS ON CONNECTED DATA

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TigerGraph

“YOU WILL GRAPH”

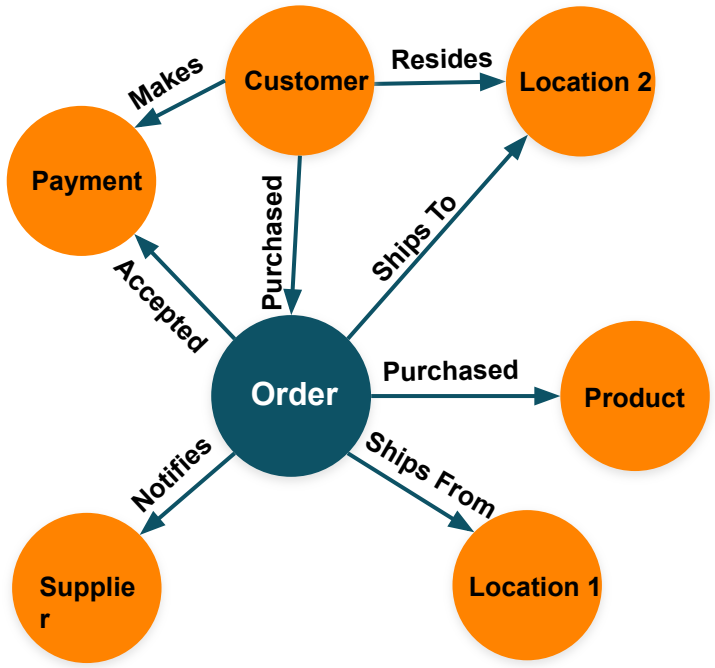
Gartner®

By 2025, graph technologies will be used in 80% of data and analytics innovations, up from 10% in 2021, facilitating rapid decision making across the enterprise.[1]

“To graph or not to graph? That is not the question—you will graph.”[2]

—Mark Beyer, Distinguished VP Analyst

WHY GRAPH ANALYTICS (AND WHY NOT RDBMS)?



Connected data
Connected insights
Breakthrough outcomes

Vertical Markets	Use Cases	Customer Benefits
Financial Services	Anti-fraud/anti-money laundering	**$100M customer lifetime value (CLV) Impact**
Healthcare, Retail	Customer360	**$150M savings**
Retail	Customer360	**Real-time recommendations for 300M customers**

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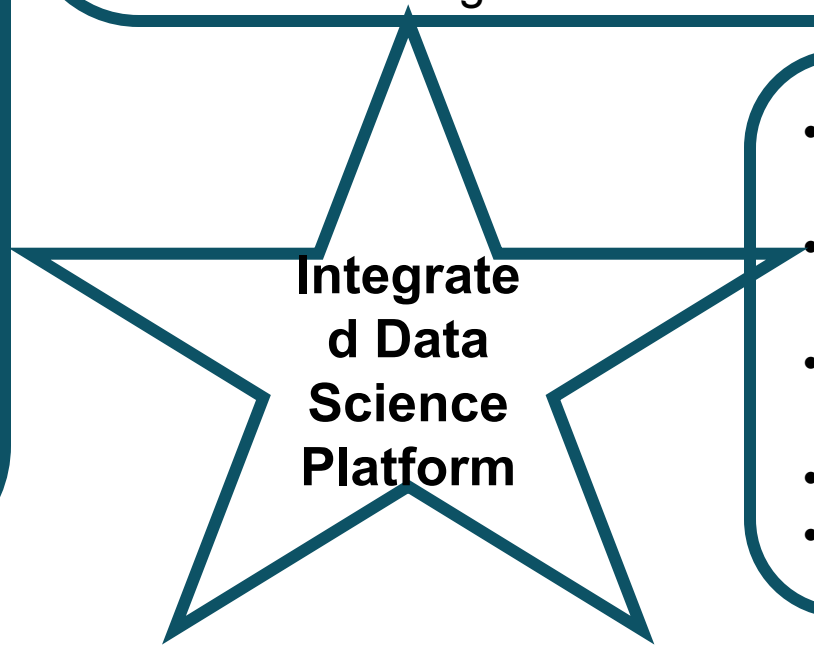
BANKING DATA CHALLENGE

Obstacles

- **Time to Market** – Bare metal deployment lacks agility and customers/stakeholders are penalized due to delays
- **Cost**: 30-40 percent data growth but difficult to make accurate predictions on data services
- **Complexity**: Increased complexity and lack of customer empowerment through self-service models
- **Productization**: Updates and patching services exceed window to change in time. New data workloads benefit from larger amounts of cpu/gpu.

Chief data Office

- 200 billion data queries
- 250 petabytes of data across multiple data warehouses (500 times size of library of Congress)
- 100,000 trained employees change policies
- Over 10,000 regulatory complaints
- $500m of risk, escheatment
- Typically 2000 projects with 100's of programs
- Compliance for over 200 taxes in 50 states



Approach

- Data Platform talent of the future
- Enable enhanced Resielency
- Provide best in class tech services with rapid adoption
- Automate by default
- Enhance developers capabilities

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PARTNERSHIP FOR RAPID DATA INSIGHTS

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- Well-known, reputable industry name.
- The most secure industry-standard servers.
- Tremendous infrastructure installation base.
- Deep integration with industry verticals.
- Rich solution portfolio.
- Extensive technical support and services.
- Flexible financial payment services.

TigerGraph

- The only scalable graph database for the enterprise.
- 40x-300x faster than the competition.
- Designed for efficient concurrent OLTP and OLAP workloads.
- SQL-like query language (GSQL) accelerates development time.
- 8 of the top 10 global banks use TigerGraph.
- Use case toolkits (Customer360, Fraud, more).

Gartner COOL VENDOR 2020

FORRESTER WAVE LEADER 2020 Graph Data Platforms

FINANCIAL SERVICES USE CASES

Eight of the top 10 global banks use TigerGraph

Credit Card Fraud
Is the applicant connected to potential fraudsters?

Impact Analysis
Communities or Clusters impacted by the fraud rings

Trade Surveillance
Are employees following the rules?

Merchant Analytics
Transaction sequencing to detect geo-location proximity

Credit Scoring
Real-time credit scoring to help recommend offers best suited to customer profiles?

Wealth Management
What Accounts, HNI to target for stocks or life change events

FINANCIAL SERVICES USE CASES AND ARCHITECTURE

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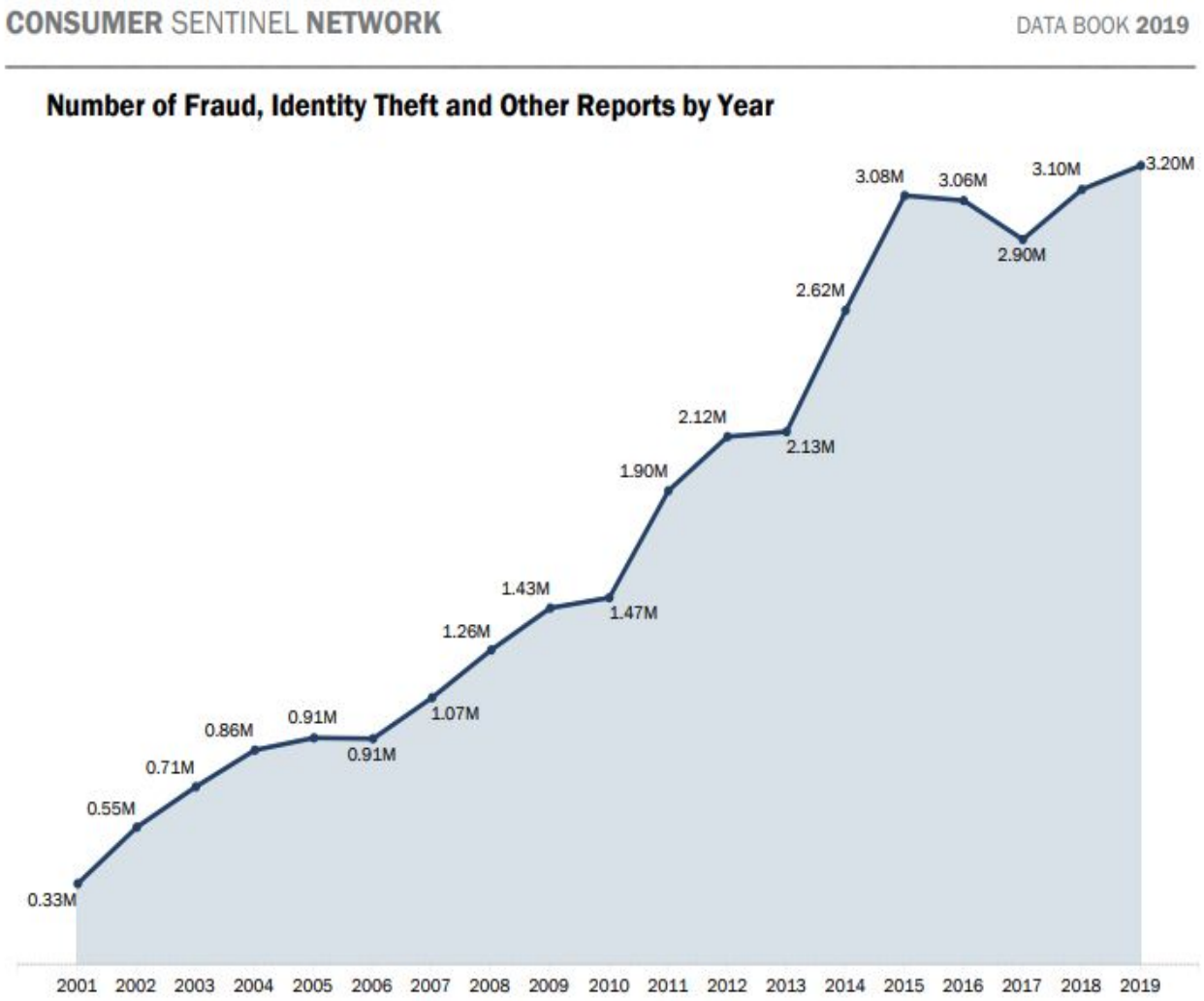
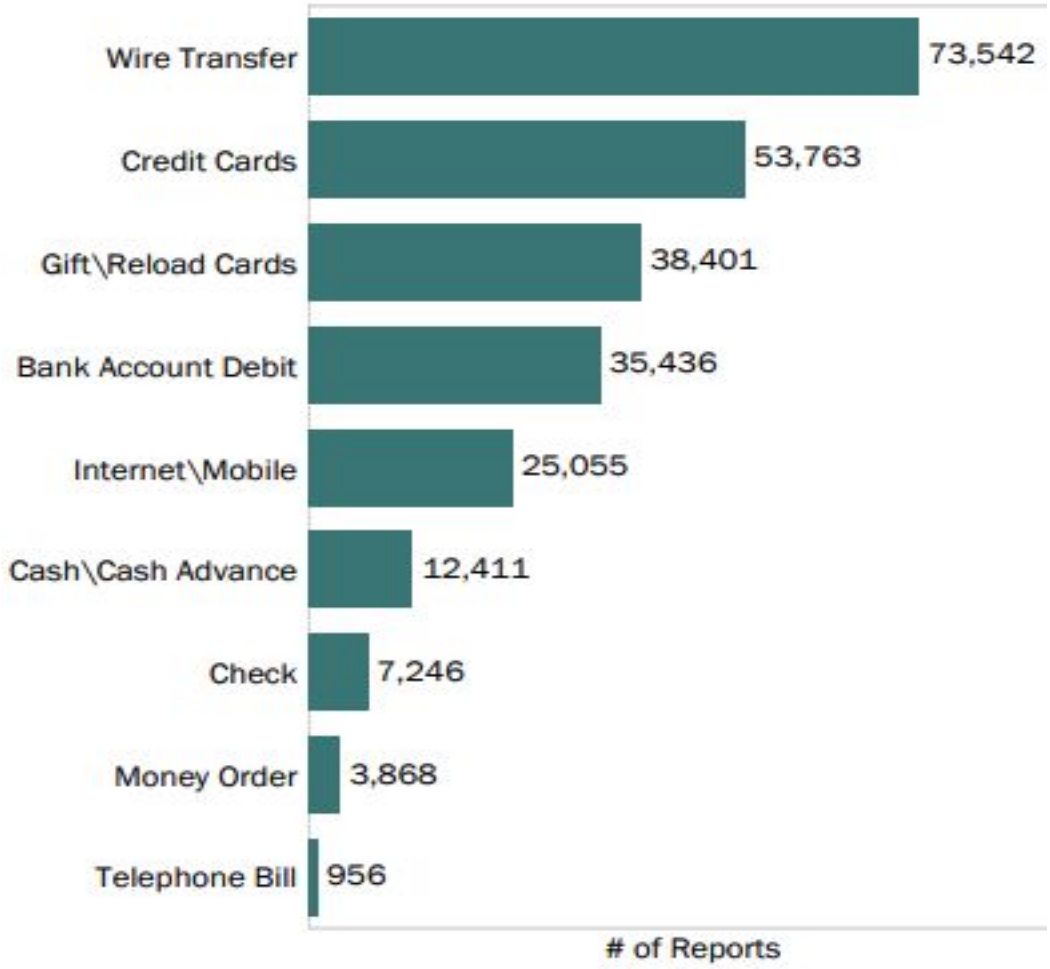
THE JOURNEY TO DETECT AND PREVENT FRAUD

Cyberfraud and digital attacks on personal data are expected to be among the leading challenges businesses face over the next decade—costing as much as $6 trillion by 2021.





SOURCE: FTC.GOV

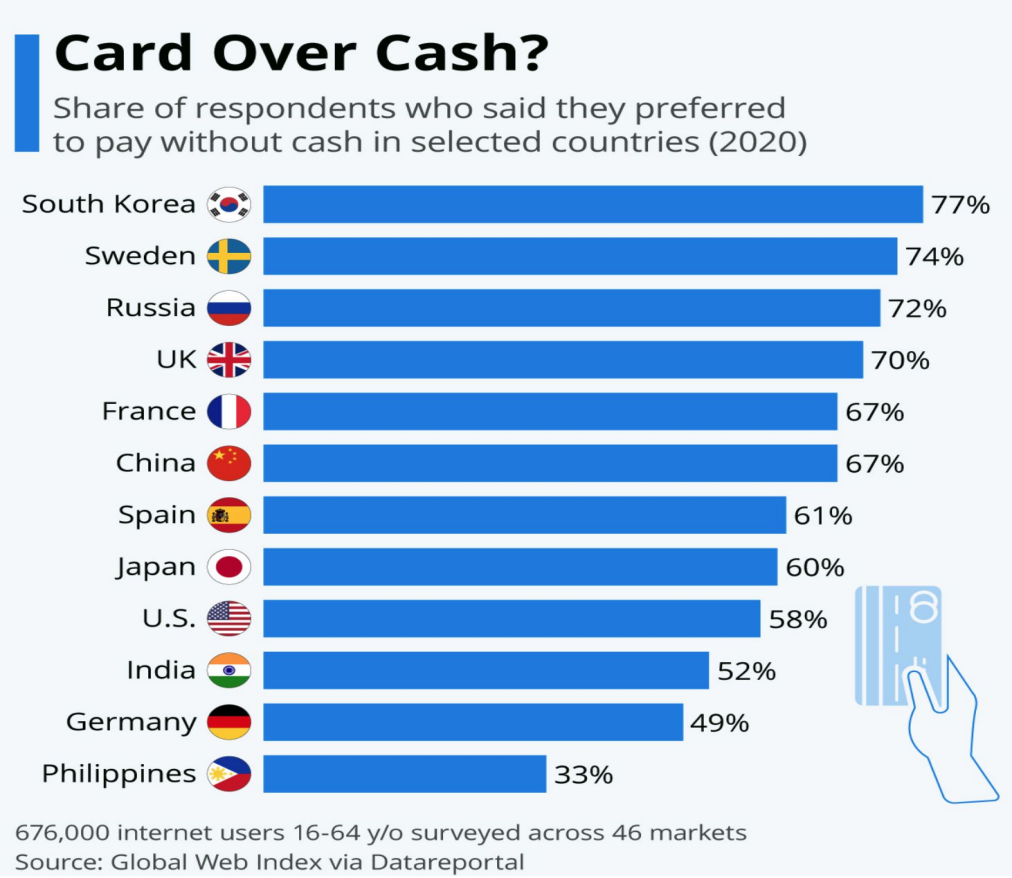
IMPACT & SCOPE: FRAUD DETECTION AND PREVENTION

1. Customers care most about the digital experience

2. Cyber-security threats have moved to loyalty accounts and rewards

3. FDP must analyze large amounts of data, at scale, and in real-time from multiple sources

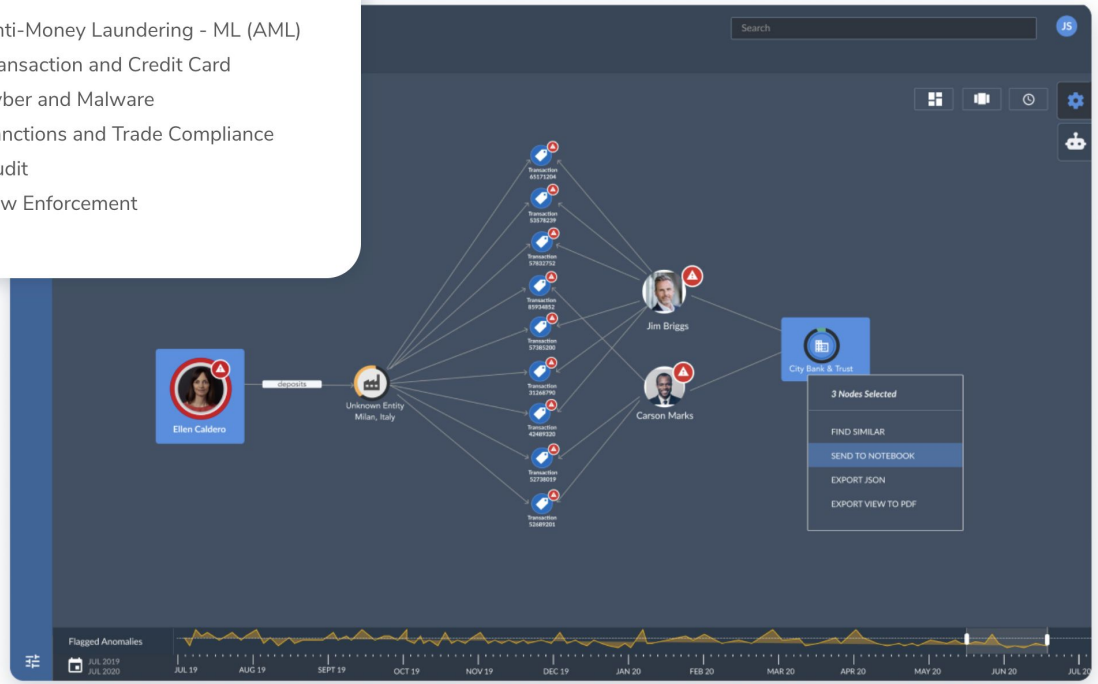
4. FDP must cover payments, spending habits, location, devices, spending history



FINANCIAL FRAUD DETECTION & INVESTIGATION TOOLKIT

Key Use Cases

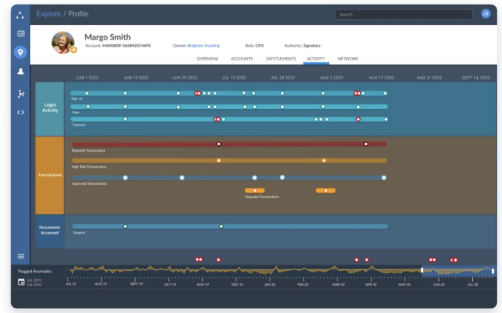
- Anti-Money Laundering - ML (AML)
- Transaction and Credit Card
- Cyber and Malware
- Sanctions and Trade Compliance
- Audit
- Law Enforcement



Business Case For The Fraud Detection & Investigation Toolkit

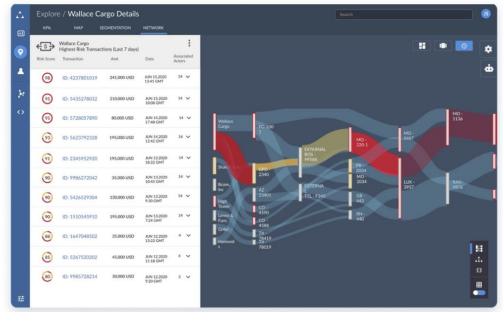
Featured Value Points

- Decrease false positives
- Increase accuracy & outcomes
- Visualize deep link patterns for regulatory audits and compliance
- Real time alerts
- AML & investigation elements
- Cost of manually tracking and complexity
- Department and team workflow



ML + Graph + Visualization Characteristics

- Built-in graph analytics
- Visualization - explainable ML/AI
- No-code investigation
- Pattern & community algorithms
- Deep learning/Model interpretability



Demo:
https://www.youtube.com/watch?v=a5muGR9Pljs

DETECTING FRAUD RINGS WITH TIGERGRAPH

Tier 1 U.S. Bank Example

Business Challenge

A leading U.S. bank wanted a better way to detect and remove fraudsters from their credit-card network. Prototypes had shown that a combination of advanced graph algorithms gave significant gains – big-data tools and other graph technologies either couldn't scale to the full customer base or gave inconsistent results.

Solution

- Implementing PageRank and Louvain [fraud] community detection in an MPP native-parallel database.
- Leveraging deep analytics to find hidden connections across 20TB+ of data.

Business Benefits

- Able to expose fraud rings, shut down connected cards, and combat fraudulent activity on a massive scale –**35% uplift** and **$50M incremental fraud avoidance**. >**$1.5 million through cost savings** on false positives, infrastructure and TCO

10TB
Card applications data

6 weeks
PoC elapsed time

3 months
Time to build and fully deploy platform to production

+$50M
1st year ROI with 35% uplift in fraud detection

CLV Impact > $200M

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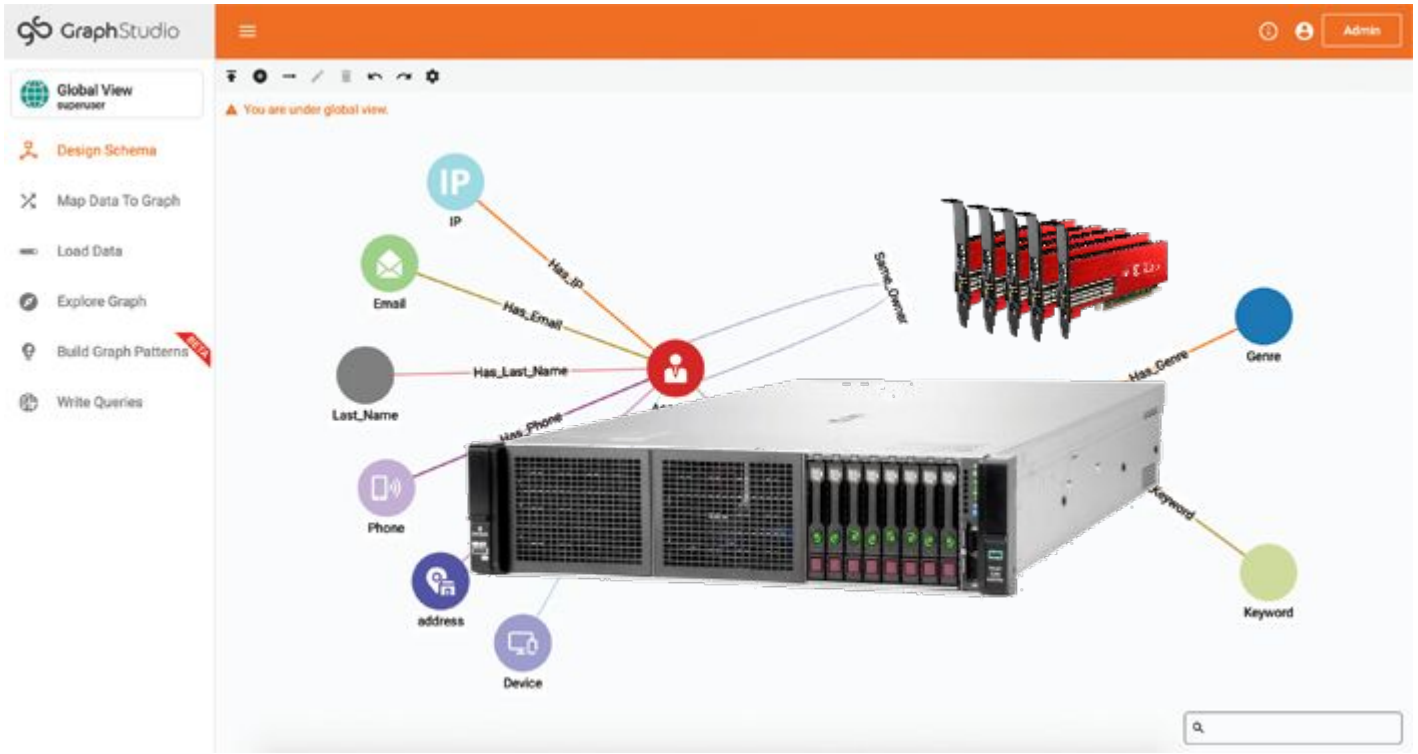
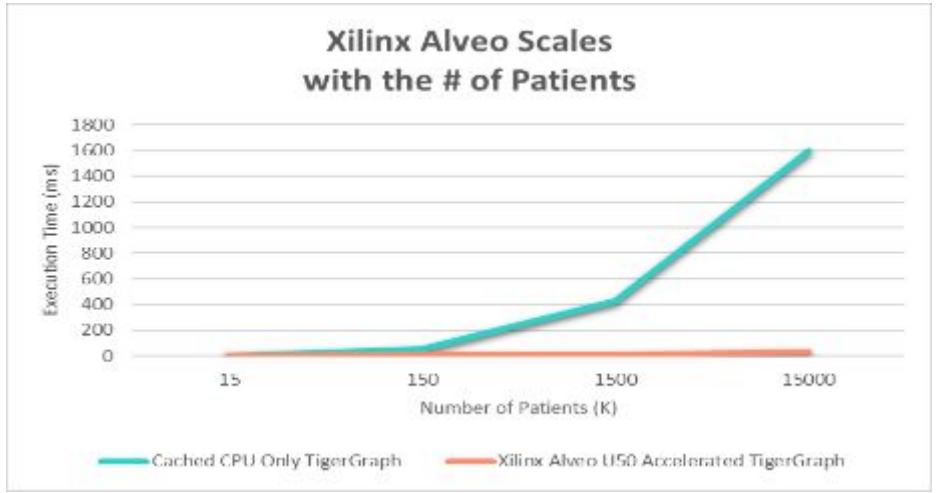
REFERENCE ARCHITECTURE PUBLISHED*

- HPE DL385 Gen10 Plus V2 Server
- TigerGraph Analytics Platform
- Xilinx Alveo U50 Data Center Accelerator



- **Use Case**: Patient 360/customer analytics
- **Dataset**: Synthetic patient data generated by Synthea™
- **Algorithm**: Cosine similarity
- **Results**:
  - Optimized algorithm
  - Reduced computational burden
  - Improved prediction performance
    - 48x faster compared to CPU only solution @15 million patients
    - Linearly flat vs. exponential growth



* **HPE Reference Architecture for Accelerated Graph Analytics on HPE ProLiant DI385 Gen10 Plus V2 Server Using TigerGraph and Xilinx Alveo U50 accelerator card**

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THANK YOU

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