Bob Calco
Chief Architect and Lead Developer

Mr. Calco is a seasoned enterprise architect and a proven software innovator with over 20+ years of experience designing, building and leading teams to deliver large-scale, enterprise solutions in the healthcare, financial services and retail sectors. For the past 5 years, Mr. Calco's work has focused on data sharing and interoperability both within and between large distributed enterprise systems. Mr. Calco was the primary visionary and architect for the VistA.js Platform within the VA, a Class 1 enterprise microservices framework that enabled data federation and reconciliation across the VA's 154 medical centers. That experience now drives his vision behind Apex's *Unify!* and *DomainMaster*, and their use of scripting in support of distributed microservices for sharing data across systems and even organizational boundaries. He is leading the Apex Team utilizing these technologies to address current industry challenges associated with Provider Data Management/Provider Directories.

Mr. Calco is a certified expert in multiple programming languages, having worked productively in over a dozen programming environments and platforms as diverse as C++, Delphi, Ada, Java, .NET (C#, VB), JavaScript, LISP, Clojure, Scala, Smalltalk, Ruby and others.

VA NAII **BRAIN** SUMMIT

About Apex

Established in 2013, Apex Data Solutions LLC is a pioneer and leader in enterprise architecture platforms and point-of-service data capture, data management, and reconciliation solutions. We develop and deliver scalable, extensible and configurable technologies for transforming raw digital data collected during provider-customer encounters into structured data. Our innovative research & development efforts and the resulting technologies can be utilized by enterprise customers regardless of the industry.

The Apex team has a proven track record of success in advancing cutting-edge interoperable technologies that integrate seamlessly across enterprise platforms and point-of-service data reconciliation systems.

Apex's open-source and commercial technologies empower data capture at the point of service and the resulting management, federation, and reconciliation of data through enterprise-tailored workflow engines that:

- Provide better outcomes at the point of service
- Enhance enterprise-level analytics of the collected data
- Offer major advances in achieving interoperability goals and objectives

Apex distinguishes itself among its competitors in two key areas: Our ongoing research aimed at solving complex interoperability and enterprise workflow challenges as well as our proven approach to solution development.

Apex's team has deep experience with federal health information system development, cross-platform interoperability, enterprise architecture development and deployment, user interface design, security, software DevOps, compiler design and quality assurance.

Apex is a registered federal government contractor on the System for Award Management (SAM) with:

- CAGE code: 7AU93
- UIE number: EE57QQQJS7D8
- NAICS codes: 511210, 518210, 541511, 541512, 541519, and 541690

VA NAII **BRAIN** SUMMIT

NAII 2021 AI Tech Sprint: Interventions for Veterans not Currently Served by the VA

- Apex's project, Provider Directory Interoperability, focused on an issue related to Veterans seeking community-based care under the Mission Act.

- A key challenge was the current and accurate Provider data available to Veterans, the lack of which oftentimes results in delaying their time access to this community-based care.

- Solving this issue would also lead to reductions in fraud and abuse, better validation of credentials, and better exchange of clinical information.

VA NAII **BRAIN** SUMMIT

Scope of the Provider Directory Project

- We focused on the basic exchange of provider data across logical organization boundaries and the maintenance of the "single source of truth".
- We focused on using blockchain and AI techniques for
  - Intelligent identity resolution
  - Automated state change propagation
  - Discrepancy detection and semi-automated resolution
  - Applying business rules across database instances
  - Data alignment without batch scripts, providing full compliance auditability

What was Demonstrated

- We were able to demonstrate

  - Making a change to a provider's data in a PostgreSQL "Master" database,

  - Synchronize the update to two other databases: a MySQL database (representing the TriCare database) and a MongoDB database (representing the VA Choice database).

  - Observe that all data were indeed aligned with the new information.

- To view the entire demonstration, visit our website at

  https://apexdatasolutions.com/apex-news/apex-participates-in-the-naii-2020-2021-artificial-intelligence-tech-sprint/

VA NAII **BRAIN** SUMMIT

Interoperability and AI Key Points Demonstrated

- Interoperability
  - Apex's approach to "interoperability" is architecture-driven, not API-driven.
  - Blockchain is used to construct single, authoritative source of truth suitable for internal SOR alignment. External alignment occurs via a distributed transactor.
  - "Inter+Op": Use of linked data provides the "inter" component, and the architecture provides the "Op" component.
- AI has several "entry points" in the architecture where it can add value:
  - Transactor - for intelligent identity resolution and linking
  - Domain cache - for intelligent state reconstruction over time and real-time discrepancy detection
  - Domain cache - for Clinical Decision Support
  - Synchronizer - for intelligent propagation and semi-automated discrepancy resolution.
  - Long-term storage ("black box flight recorder") - for virtually limitless Machine Learning and BI applications
  - Adapters - for use of inference via OWL and logic programming

The Benefit to Participating in the NAII AI Tech Sprints

- Access to VA resources and SMEs

- Ability to focus on real issues impacting the veteran community

- Potential to gain recognition for the work you and your company is focusing on

- Potential pilot contract opportunities

Apex has been awarded a 12-month contract to expand on the work completed in the Tech Sprint

VA NAII **BRAIN** SUMMIT

Questions?

Email:
information@apexdatasolutions.com

VA NAII **BRAIN** SUMMIT

Thank you for joining us today!

APEX DATA SOLUTIONS

www.apexdatasolutions.com

VA NAII **BRAIN** SUMMIT