

Noelle Milton Vega
Greenfield Enterprise-Strategic
Business + Technology Architect



- **E:** nmvega@prismalytics.io
- **W:** BLOGS / ARTICLES / PAPERS
- **W:** BLOG: <https://jupyter.ai> (new)
- **W:** LINKEDIN PROFILE (not updated)
- **W:** PERSONAL R&D LAB

Some Cover Letter body-of-work URLs:

- **DELOITTE:** Letter-Of-Commendation
- **NYMEX:** Multi-Datacenter BC/DR SAN
- **BAML:** Realtime Trade Anomaly CEP
- **UBS:** Custom Data Analytics Pipeline
- **NETAPP:** Product Devel & Marketing

- **AUTHOR (TECH):** Machine Learning
- **AUTHOR (BIZ/DEV):** Product Glossy

Entrepreneurship via PRISMALYTICS:

- **FEDERATED HEALTH** Whitepaper

COVER LETTER

Early on I observed numerous examples of great leadership, but what distinguished the truly successful from the rest was a higher level of contribution towards an organization's most important goals. I fashioned my career after that observation, and my body-of-work has now grown to include consultancy, advisory, entrepreneurship and key driver-roles within the heart of many businesses ranging from global Fortune-500 firms to startups.

In the following pages, the reader will hopefully recognize this through full-cycle collaborations with professionals all along the organizational ladder – advising executives on business-value at one end, working alongside technology and operations staff at the other, and interfacing with key stakeholders everywhere in between:

I have strategically helped shape business directions towards more sustainable and certain futures • Identified solutions that streamline day-to-day operations • Mentored and guided teams towards their successful finish lines • Driven consensus across functional organizations • And personally conceived, architected and implemented greenfield business-technology platforms that made enterprise mission-critical goals lasting realities.

And by faithfully applying time-tested best-practices, concepts and playbooks, I've been able to replicate those outcomes across disparate enterprises and verticals: Financial Services, Pharmaceuticals, Telecommunications and CableTV Media & Entertainment. Though deeply technical, I'm known for my understanding of the impact that strategic (versus transactional) approaches to technology have on businesses ability to stand tall during these emergent times.

Finally – and most importantly – though secure with my technical accomplishments, my greatest values emerge in situations where decision-makers lean on my strategic thought-leadership, knowing that my “in-the-trenches” past will help guide them to optimal business-technology outcomes. As earlier mentioned, my motivation is higher-purpose contribution-based, never vanity-driven; and, in fact, many of my successes have quietly unfolded from behind-the-scenes collaboration with executives on their high-stakes, high-visibility, high-value initiatives.

I'd be delighted to discuss your challenges and review business-facing ways in which my breadth & depth experiences can be of value. I have included an abbreviated variation of my résumé to provide you with additional background that will hopefully form the basis for further discussion.

Sincerely,
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GENERAL CAREER PROGRESSION

- Career began as Sonar Communications Engineer for **G.E. Aerospace** (a secret clearance defense project); followed by Masters Degree summer thesis work as Digital Signal Processing engineer for **DirecTV** during its R&D phase (**Sarnoff/RCA Labs** in Princeton, N.J.).
- Globalization and other macro-economic forces caused a career pivot towards enterprise business architecture, where with increasing breadth, depth and responsibility, I navigated my work along Information Technology, Business Strategy & Advisory and Business Optimization roles. These roles began while working for **SUN MICROSYSTEMS**, where I helped their Tier-1 enterprise clients plan, prioritize, procure and deliver high-stakes multi-million initiatives. I would later continue these full-cycle roles under my personal consultancy, PRISMALYTICS.
- Departed SUN MICROSYSTEMS to found **PRISMALYTICS** (originally named **RENSELAER TECHNOLOGY GROUP**), where I've been principal consultant to Fortune-500's biggest brands on their mission-critical projects. As with SUN, successful outcomes span every major vertical, including: Healthcare; Financial Services; Pharmaceuticals, CableTV, Media & Entertainment; Securities Exchanges; Commodities Exchanges and Telecommunications.
- Projects -- now numbering in the dozens -- were diverse and include: Investment Bank Trading Floor Systems Design • Data Center Acquisition, Architecture & Migrations • Video On Demand Cable TV Systems • Artificial Intelligence-based Recommendation Systems • Business Continuity & Disaster Recovery SAN Architectures • Real-Time Trade Stream Analytics Platform; and more. URL links on the **left** and in **blue** above provide a few examples of work performed.
- I credit sustained success to rigorously adopting, adapting, and faithfully applying the time-tested best-practices and playbooks learned during those many marquee engagements.

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EDUCATION AND INDUSTRY VERTICALS — (PLEASE REVIEW BODY-OF-WORK COVER LETTER ON PAGES 4 & 5)

- **RENSELAER POLYTECHNIC INSTITUTE (RPI)** -- B.S. ELECTRICAL ENGINEERING
- **BOSTON UNIVERSITY (BU)** -- M.S. ELECTRICAL & COMPUTER ENGINEERING
- **HIGH SCHOOL VALEDICTORIAN** (NEW YORK CITY, N.Y.)
- **NEW YORK UNIVERSITY (NYU)** -- SCHOOL OF CONTINUING EDUCATION COURSES
- **U.S. GOV'T SECRET CLEARANCE** (COMMUNICATIONS ENGINEER @ G.E. AEROSPACE DEFENSE). *INACTIVE*

FINANCIAL SERVICES • PHARMACEUTICALS • CABLE TV MEDIA & ENTERTAINMENT
SECURITIES EXCHANGES • COMMODITIES EXCHANGES • TELECOMMUNICATIONS
ENTERPRISE COMPUTE & STORAGE VENDORS • GOVERNMENT SECTOR
RESEARCH & DEVELOPMENT LABORATORIES • DEFENSE INDUSTRY

TECHNOLOGIES: TOOLS, PLATFORMS, CERTIFICATIONS (EMPLOYED OVER YEARS ACROSS DIFFERENT ENGAGEMENTS)

AMAZON WEB SERVICES (AWS) • LINUX / LXC CONTAINERS • DOCKER • PYTHON 3 • UNIX BASH & CLI
AWS-BASED HYBRID DATACENTER ARCHITECTURES • AWS-BASED DATACENTER MITRATIONS
AWS-BASED BUSINESS CONTINUITY & DISASTER RECOVERY (BC/DR) • CLOUDERA CDH AND HADOOP ECOSYSTEM
AWS-BASED REALTIME STREAM COMPLEX EVENT PROCESSORS (C.E.P.) • E.T.L. • NOSQL DATABASES
LONG DISCANCE MULTI-SITE FIBRE-CHANNEL SAN ARCHITECTURES FOR BC/DR
AWS TOOLS (ABBREV): SQS | ECS | SNS | DYNAMODB | ELASTICACHE | EC2 | VPC | KINESIS | DIRECT CONNECT | ETC.
OPEN SOURCE TOOLS (ABBREV): MONGODB | C* | REDIS | STORM | KAFKA | SPARK | SCIKIT-LEARN | TENSORFLOW | ETC.

CERTIFICATIONS:

- COURSERA: NEURAL NETWORKS & DEEP LEARNING | ANDREW NG
- COURSERA: IMPROVING DEEP NEURAL NETWORKS: HYPERPARAMETERS, REGULARIZATION & OPTIMIZATION | ANDREW NG
- COURSERA: STRUCTURING MACHINE LEARNING PROJECTS | ANDREW NG
- AMAZON WEB SERVICES (AWS): CERTIFIED SOLUTIONS ARCHITECT – ASSOCIATE (CSA-A) (2018 VERSION)
- AMAZON WEB SERVICES (AWS): CERTIFIED DEVELOPER -- ASSOCIATE (CD-A) (2018 VERSION)
- NEW YORK UNIVERSITY (NYU): CERTIFICATE PYTHON-3 PROGRAMMING (2008)
- SUN MICROSYSTEMS (SUN): CERTIFICATE ENTERPRISE-STRATEGIC TECHNOLOGY ADOPTION & ARCHITECTURE

EXPERIENCE (INCLUDES URLS TO DOCUMENT / ILLUSTRATION ARTIFACTS WHERE AVAILABLE):

[PRISMALYTICS, LLC - CONSULTANCY](#) — 1998 - PRESENT

Following 4-years as lead architect for **SUN MICROSYSTEMS'** Northeast Geo enterprise clients, I departed to found the **RENSELAER TECHNOLOGY GROUP, LTD** consultancy in 1998. It was later reformed as a **LLC** under the name **DIMENSION DATA, LLC** and shortly after rebranded / renamed to its current name, **PRISMALYTICS, LLC**. Engagements indicating (**CONSULTANT**) — i.e. nearly all of them — were performed as c2c consultant under my consultancy; which in turn was a 3rd or 4th-party sub-consultant to various prime contractors. Some engagements were performed remotely. **During periods when not consulting, my work focused on developing new (personal) entrepreneurial business ventures.**

[BRITISH TELECOM – DATA STREAMING AND ANALYTICS](#)

JUNE 2018 – MARCH 2019 (**CONSULTANT**)

A restrictive NDA and project sensitivity prevent divulging business-level detail; however, I lead a project as well as write **Python 3.x** code that drives a **Kafka 2.x**, **Spark 2.x** and **MongoDB 4.x** real-time analytics stack with **Spark 2.x MLlib** (not MLlib) to identify relationships between transactions.

[MODERNIZING MEDICINE – RDBMS STREAMING CHANGE DATA CAPTURE \(CDC\) POC ON AWS](#)

NOVEMBER 2017 – MARCH 2018 (**CONSULTANT**)

Remotely designed a Change Data Capture POC to generate real-time change-data-event-streams from updates made to multiple MySQL database shards. The architected POC consisted of (1) Kafka Connect connectors tapping into MySQL bin logs and producing change-data-events onto Kafka topics; these connectors are Docker containers running inside **AWS ECS**, (2) A **Kafka** platform implemented via Confluent's managed Kafka service on AWS, (3) A custom **Python-3** program to consume data from Kafka topics and serialize them as **Apache Parquet** objects in **AWS s3 buckets** (enabling business intelligence teams to efficiently query datasets via **Apache Impala**). Success was to be measured across two KPIs: (1) Replacing an 8-hours long **AWS EMR** batch job with a continuous data stream, in turn replacing hours-stale datasets with near real-time equivalents and (2) A virtually operator-free (or low-touch) solution by way of a managed-services / quasi-serverless centric design.

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SYNERGY FITNESS – AWS Serverless Architecture for Analytic Reports

JUNE 2016 – AS NEEDED (**CONSULTANT**—RECURRING / RE-ENGAGED AS NEEDED)

Designed AWS-based capture and report platform to track member engagement and R.O.I. Attributes including member visit dates, check-in/check-out times, membership level, facility feature utilization (e.g. trainers, classes, etc) are added or updated to **DynamoDB** via calls to **AWS API Gateway** that trigger **IAM-Role** enabled **AWS Lambda functions** to update the database. Local and Global Secondary Indices are used to accommodate various queries efficiently. Analytic results are programmatically fetched using boto3 Python programs and/or using a **CloudWatch Events** (cron jobs) to periodically trigger Lambda-driven DynamoDB queries that are saved to AWS s3 in CSV format; the completion of which triggers a **AWS SNS** notification to email a business-owner email address with the CSV's s3 restricted URL.

UNITED BANK OF SWITZERLAND - Business Process Acceleration and Software Development

JANUARY 2015 – MARCH 2016 (**CONSULTANT**)

Retained by **United Bank of Switzerland** 's **Evidence Lab** for a two-phased project. Phase-1 consisted of an intensive audit of business processes and I.T. capability in New York and London in order to determine what tools could be developed to accelerate financial research analyst activity. The 152-page audit report steered development of a solution consisting of a data transformation pipeline, a mini-Master Data Management (MDM) system, and a taxonomy-centric data catalog. This solution was developed during phase-2 of the project using pure Python-3 and Oracle. The platform enabled the business to receive arbitrary web-derived data, to cleanse, normalize and enrich it; and ingest the final result into a vetted data store which B.I. tools would read. The deliverable was modeled after this solution: <http://www.prismalytics.io/alt-data>

BANK OF AMERICA – Trade Stream Anomaly & Fraud Detection

FEBRUARY 2014 – NOVEMBER 2014 (**CONSULTANT**)

Engaged with Bank of America's trading division to understand requirements for replacing an aging FIX trade analytics system. The replacement needed to identify wash-sales, orders-to-execution latencies, account limit breaches and other **trade anomalies in real-time**. Next, worked with LOBs to secure buy-in and funding for the Complex Event Processing solution I proposed, which was based on open-source big data technologies including Apache Storm, Apache Cassandra and Redis. After reaching consensus, successfully designed, built and delivered the system which was able to detect and process 12-million events/second. Success of this high-visibility open-source project had a bank-wide side-effect of proving the viability "BUILD" over "BUY" option. The following PDF shows some of the R&D I performed during the final design phase: <https://bit.ly/2JdRxoB>

MERRILL LYNCH – Architect (Recommender System)

MARCH 2013 – FEBRUARY 2014 (**CONSULTANT**)

Engaged to design a system to recommend investment research publications to wealth clients browsing Merrill Lynch's financial research portal. (Similar to Amazon's "You make also like" feature). The recommender used a combination Item and User-Similarity collaborative filtering algorithms, as well as K-Means clustering to select from 100's-of-thousands of research publications to recommend for purchase. Inputs to the algorithms included client demographics, client investment objectives and publication attributes such as title text, sector, industry, author, age-of-publication, etc. The system was implemented using a combination of Apache Mahout on top of Hadoop as well as Python-3 and Scikit-Learn. A Talend pipeline was used to shuttle raw input data and computed results between HDFS and a data-warehouse.

SELECT LEGACY EXPERIENCES (OMMISSIONS ARE FOR BREVITY):

REUTERS --acquisition--> NASDAQ – Stock Exchange Architect | Performance | SAN | Datacenter Migration

JUNE 2004 – 2006 (**EMPLOYEE** – REUTERS, then NASDAQ after acquisition)

INET was an electronic trading platform / Stock Exchange developed and autonomously operated within **REUTERS**. It executed orders at sub-millisecond speeds and transacted billions of dollars in daily trade volume. Being the fastest exchange in the world, NASDAQ acquired it in 2005 to replace its own aging exchange (and today runs NASDAQ and other exchanges globally). I was invited to work there by my peers of the dot-com era, (including the -then CTO of INET and subsequently of NASDAQ), and my pre and post-acquisition roles included: **Writing software in C** to manage these black-box (zero human-interface) grid of embedded Linux systems; **Performance engineering** to instrument end-to-end tests & measurements aimed at making the platform still faster; **SAN Storage Architecture** to store quotes, orders and execution transactions in real-time; and **Datacenter Migration** to help with post-acquisition planning and execution of the INET datacenter from New Jersey to Ashburn, Virginia, including the critical stock exchange cutover during a 3-day weekend.

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[NYMEX / CME GROUP – Business Continuity / Disaster Recovery Architect \(BC/DR\)](#)

[SEPTEMBER 2002 – APRIL 2004 \(CONSULTANT\)](#)

The New York Mercantile Exchange (NYMEX) engaged me to design and implement a post 9/11 BC/DR datacenter platform, as well as design policies and procedures to follow in case of disaster. The final platform consisted of a Storage Area Network that connected primary and backup datacenters, and real-time synchronously replicated commodities trades and mission critical database transactions between them. A draft of the final platform design is seen here (with permission): <http://career.prismalytics.io/nymex.pdf>

This platform along with accompanying processes and procedures mitigated operational, reputational, financial and legal risk. KPI metrics against which the success of this solution was measured included Recovery Point Objectives (**RPO**) and Recovery Time Objectives (**RTO**); both of which were incorporated into bi-annual failover scenarios and tests.

FULL-CYCLE RESPONSIBILITIES INCLUDED:

- Solution presentations to CEO/CIO/CTO to gain consensus
- CAPEX and OPEX justification (ROI / TCO) to plan and procure 3-year budget from the CFO
- Infrastructure capacity planning and right-sizing (including a pay-as-you-grow approach)
- Sourcing vendors and vetting respective product lines for fit & fitness.
- Working with facilities personnel and trade-unions to prepare and place incoming infrastructure
- Architecting, Deploying and Documenting the inter-datacenter SAN platform (see above URL)

[CABLEVISION SYSTEMS – Senior Product Architecture and Market Deployment Strategist](#)

[MARCH 2001 – JUNE 2002 \(CONSULTANT\)](#)

Engaged in all facets of the design, development and deployment of Cablevision's inaugural Optimum.TV systems, the nation's first Video-On-Demand CableTV product. Activities occurred at the Master Headend datacenter and included, designing storage and streaming systems for on-demand ordering of digital content; systems and software to enable at-home self-provisioning of new cable boxes; highly-available databases for customer accounts, digital orders and subscriptions; the Conditional Access System (CAS) used to control subscriber access to programming via encryption; replication of databases and digital content to a backup datacenter; integration with Madison Square Garden (then owned by Cablevision) to offer subscriptions to live and on-demand programming of MSG events; and more.

[DELOITTE & TOUCHE – Application Platform Architect; Team Builder & Manager](#)

[JUNE 1997 – FEBRUARY 1998 \(SUB-CONTRACTOR via EMPLOYEE FOR SUN MICROSYSTEMS\)](#)

As primary consultant, Deloitte & Touche was responsible for building a PeopleSoft / Oracle application that would service Adecco Group's (formerly Olsten) 1,100+ staffing offices globally. As subcontractor to Deloitte, I was retained to architect and deploy the enterprise backend compute, storage, SAN and database farms that would be the foundation of that application. Duties included: Working with stakeholders to get capacity growth projections for right-sized, pay-as-you-grow budget and purchases; Building the SUN, EMC, SAN, Veritas, Oracle-based farms and documenting them; Building and training the permanent systems team that would operate the farm once I completed the project. A summary of this work was captured by the Deloitte Managing Director here: http://career.prismalytics.io/FullCycle_Commendation.pdf