The Story of Vahalo

The story begins back in the late 70s when I was finishing a BS in Civil engineering at BYU. Two brand new Apple IIs were setup in the Soils Lab of the CE department for use by students. I was hooked. In the mid-eighties, I did a project for my MBA thesis that attempted to apply computerized database systems to the management of an engineering firm. My first computer was an original Apple Macintosh. The first version of what would ultimately become the Vahalo system was built on the ACIUS database platform for the MAC. It soon became obvious that the PC would be the primary platform for Autodesk's AutoCAD system, so the system was rebuilt on the Microsoft Access Database platform (First pivot and complete rebuild). Next there was a period of considerable evolution of the system as it was implemented and continually improved in my own engineering practice in Anchorage Alaska. I also got significant feedback from other engineering associates. Ultimately after several cycles of the modify-test-validate and learn process, the system was refined into a marketable product and successfully implemented in a few engineering firms in the Anchorage area. Then for the next 10 years my entrepreneurial aspirations were put on hold with the birth of a severely handicapped child followed by several other life challenges that were well beyond my control. During this time I continued to build a variety of other system for other clients as a sideline to my engineering consulting practice (See Examples Below). Eventually it became obvious that MS Access as a major distribution platform was not going to work and the system would need to be rebuilt on a web platform and have mobile capabilities. This was in the mid-1990s and web technologies simply weren't sufficiently mature at the time.

In 2010, I went to work on the I-15 Core Freeway expansion project in Utah County as a Quality Assurance (QA) Manager and was shocked at the lack of effectively implemented digital technologies being used for the project. At $1.3 Billion, the Project was the largest construction project ever completed in the State of Utah and was built by a consortium of some of the best companies in the nation. The mishmash of technologies being used to manage and control the project was a joke.

The Quality Assurance Company I worked for, out of Austin Texas had a custom built, web-based software package designed to manage the inspection, materials testing, and Lab work for the project. This was supposed to be the best engineering management software of this kind available anywhere and was the sole reason that this company was selected by Fluor to be part of the consortium. I was very interested to dig in and learn as much as I could about this system. It did manage to collect the basic information and generate the required reports, but all data was first hand written on paper forms and then entered into the system by data entry clerks on a back office. Initially I was disappointed with the clunky and confusing user interface that required a page refresh with nearly every action. As I worked with the system and was eventually able to get access to the data structure and coding, I was appalled at what a complete mess I was discovering. Ultimately, I was able to convince the owner of the company that a rebuild of his software was needed and I was put in charge of rebuilding their system from scratch here in Utah. My team and I were kept completely independent from the Austin based programmers who built and continued to maintain the original system.

Guided by the experience of the 20+ systems I'd developed previously, (See examples Below) along with the glaring shortcomings I was seeing in this existing system, we were able to build a new system from the ground up as a full-blown Web application. My team, which consisted of myself, two programmers,

and an admin assistant had our initial Minimum Viable Product (MVP) in the field collecting direct data on iPads within about 3 months. Ultimately, we were successful in building a system that far surpassed the capabilities of the initial system within 10 months. The old system had been in continuous development for over 6 years. At that point, the Utah I-15 Core Project had successfully come to an end and the other large mega-projects that were supposed to keep the Utah employees busy did not materialize, so the Utah office of this QA company was effectively shut down in December of 2012. This shutdown included my development team and our project was turned over to the original Austin based programming team in the midst of much internal political turmoil that I was very happy to walk away from.

In January of 2013 I began working with my brother David who is the owner of a Non-Destructive Examination (NDE) firm in Texas that focuses on advanced ultrasonic testing and examinations for the Oil & Gas Industry. He had already been working on finding solutions to mobilizing the daily work processes of asset maintenance activities in the Oil and gas industry. David's efforts focused on two existing platforms, Formotus and Mobile Epiphany. Both of these platforms attempt to provide direct data acquisition on mobile devices. Formotus uses Microsoft InfoPath Forms and SharePoint Data facilities and makes them available on Android and IOS devices. Mobile Epiphany is a full custom solution platform that attempts to provide more complex work processes and work flows in a mobile environment. We used these platforms along with David's marketing team to do product/market fit validation with a large number (100+) of potential clients. We then worked with these platforms to provide badly needed solutions to several clients during the beginning of 2013.

The Light bulb Moment

After all these years of experience as an engineer working in my industry, while at the same time building dozens of different computer systems on a verity of different technology platforms, there came a moment of inspiration where the vision of a completely unique type of system structure came to me. Within 2 hours I had sketched out with paper and pencil the needed relational database structures and the basic user-interface components of what would eventually become Vahalo.

In June of 2013, I connected with a small development Group out of Pune India via Freelancer.com to build the next Version of Vahalo using the newly available HTML 5 web development environment and the Hot-Towel Single Page Application (SPA) framework and associated technology stack. After 6 months of development we had a working minimum viable product (MVP) and I began working with Boom Startup (Utah Based Startup Accelerator) to do networking and make contacts. Although I ultimately didn't pursue an investment from the program, I did connect with a brilliant young programmer named Mitchell Harris who was very interested in what I was doing. Mitchell immediately did a full code review and determined that although we had a good start, the Hot-Towel Single Page Application (SPA) framework had not become the HTML 5 industry standard and recommended we rebuild the system using the Angular SPA Framework that had recently won the support of Google.

Angel Investor

After another 9 months of rebuilding the system yet again from the ground up, we were ready to show our software to the public for the first time and rented a booth at one of the largest Engineering and Construction related Trade shows in the State of Utah in November of 2014. Shortly after the Conference, we met in the conference room of one of the larger Construction Inspection and Materials

Testing firms in the State of Utah for what we hoped would be our very first serious sales opportunity. We made our pitch and gave a live demonstration, answering a wide variety of questions. The next day, we provided them with a proposal to get our system implemented for their main office. Two days later, we were invited back to meet again in their conference room where they indicated they wanted to invest in our company rather that just be a customer. Thus, began a wonderful and productive 7-year relationship with our Angel Investor. This Angel Investor Relationship provided us the opportunity to evolve, refine and perfect Vahalo by meeting the needs of essentially a single client. As of January 2021, Vahalo will begin marketing globally while the Angel Investor will continue to use the system to Grow its company internally.

Other Notable Projects That Provide a Foundation for Vahalo

Several notable projects are listed below:

OneTouch – Oil and Gas Field Asset Inspection and Maintenance – Provide ongoing maintenance and refinements to a system originally designed by others. A mobile system that operates on most major mobile platforms (Windows, iOS, Android) offering full data security and the ability to operate without a connection. Major features of the system include:

- Custom Data Acquisition Work Processes for API 510, 570, 653
- Custom Data Acquisition Work Processes for TML Tracking
- Custom Data Acquisition Work Processes for Conventional Inspection
- Custom Data Acquisition Work Processes for Safety Verification and JSA Reporting
- Built In Photo And Signature Capture
- Geo Spatial Mapping Of Assets
- Bar Code and RFID Reading Capability
- Powerful, Real-Time Custom Reporting

The system is built on the Mobil Epiphany rapid application configuration platform for mobile devices. This platform allows for fast, reliable, easy to use custom system development and deployment.

ELVIS 3.0 – Heavy Civil Construction Inspection System – Developed a complete enterprise level web based application for managing all quality assurance activities for heavy civil construction. Major features of the system include:

- Direct field entry of all Inspection Data

- Tracking and resolution of all construction issues
- Work Process check listing
- Automated notification and alert communication
- Project wide collaboration
- Fully geo-spatial capable using Google Maps
- Automated materials field testing and reporting
- Automated materials laboratory testing and reporting
- Materials certification tracking
- Fully integrated construction document distribution system
- Six layer code architecture for maximum security and scalability

The system was developed using HTML5 JavaScript, jQuery, CSS3, with MSSQL, MVC and C# on the server side. The system was designed to be very user friendly and easily configurable for different jurisdictions.

I 15 Core Document Distribution System – Developed and implemented an innovative yet simple system for distribution of project documents drawings and critical communications. The system utilized the Apple iPad Platform with Cloud-Sync and custom document indexing features.

P.I.M.S. (Project Information Management Systems) - This is a full office automation system that has been developed in-house for resale to small and medium sized technical professional firms. This system has become a core product for our firm. PIMS includes the following major features:

- Company, People and Contact Manager
- Automated Form letter and Standard Correspondence Generator
- Automated First-Draft Proposal Generator
- Automated Project Scope Generator
- Automated Project Fee-Estimate Generator
- Automated Project Schedule / Gant Chart Generator
- Task Based Check Listing System
- Library / Document Index
- Fully Integrated Time Sheet Entry
- Front Line Project Expense Entry
- Time and Expense Checking and Verification System
- Invoice Generation and Tracking System

- Construction Cost Estimating and Bid Tab Generation System

The system has been developed almost entirely within the Microsoft Access Development environment. Only the Project / Gant Chart Generator is implemented in Visual Basic. All parts of the system are fully integrated and ease of use has been a primary objective throughout its development.

ADATS (Automated Data Analysis and Tracking System) - This application was originally developed for BP Alaska for use in their Corrosion-rate monitoring program in the oil field facilities at Prudhoe Bay. This system is designed to facilitate the efficient management and tracking of the vast quantities of data generated by Automated Ultrasonic Testing (AUT). AUT uses sound waves to measure the thickness of steel pipe in a very tight grid, accurately determining the extent of interior wall loss due to corrosion. A single one-square-foot scan generates 40,000 to 50,000 readings. ADATS is a system that provides the efficient management of a corrosion-testing program that incorporates thousands of scan locations on hundreds pipes and vessels spread over numerous different facilities. ADATS is currently the only system available that provides the following features:

- The system filters out the bad or irrelevant readings that inevitably occur in all AUT scans by using Artificial intelligence pattern-matching algorithms.
- The system allows subsequent scans at the same location to be adjusted on screen to precisely overlay the previous scan so that accurate comparative calculations can be performed.
- It allows for the identification and tracking of individual pits or corrosion clusters within a single scan

ADATS was developed using Visual Basic 3.0 to build the user interface. The data is stored in a Microsoft Access Database. Microsoft Access was used to develop a variety of reports and Charts from the resulting data.

ADATS is the key element in BP Alaska's corrosion rate monitoring program which is funded at $2 to $4 million dollars annually. Without ADATS, the corrosion-monitoring program would not exist in its present form. It has performed well beyond even the most optimistic projections made during its development process.

CHAPS Training and Session Management System - This is a full program automation system that was developed specifically for the unique needs of the CHAPS (Community Health Aid Practitioner) Training program within the Alaska Native Medical Center. This system is allowing for dramatically improved efficiencies within the program. This system includes the following major features:

- Company/Organization, Trainee and Instructor Manager

- Automated Trainee Application Process Manager
- Trainee and Instructor Credential Tracking and Management
- Automated Session Roster Development and Management System
- Automated Session Class Generator
- Automated Session Schedule Generator
- Class preparation Check Listing System
- Class Resource Development and Tracking
- Class Requirement and Student Evaluation System

The system has a MS SQL Server backend with a Web Application developed in Macromedia Cold Fusion. All parts of the system are fully integrated and ease of use has been a primary objective throughout its development.

Polar Bear Observation database – This project involved the rebuild of an existing database to provide greater functionality, ease of use and data stability. The system organizes 40 years of accumulated polar bear research data and provides a user friendly interface to record and track every aspect of the current Polar Bear Research Project. Features of the system include:

- Research mission data with detailed mission event logging linked to real-time GPS locations
- Bear observation and capture data
- Bear family and reproductive tracking
- Capture drug tracking and usage
- Bear marking/tag status and tracking
- Blood and tissue sample collection storage and distribution tracking
- Radio collar inventory and maintenance tracking
- Satellite collected radio collar data uploading and analysis tools
- Den characteristic and location tracking

The system has been developed entirely within the Microsoft Access Development environment.

Alaska Department of Motor Vehicles (DMV) Supply Inventory Database and Web based Ordering – This project involved the conversion of an MS Access database developed for the Department of Public Safety (See Below) for use by the DMV. The most significant aspect of the project is the development of a web based ordering system that allows the various DMV offices and distribution points to order supplies and track order status via the internet using web pages that interact directly with the existing MS Access data structure

Department of Public Safety Supply Warehouse Inventory System – This project involved a custom inventory management system based in Microsoft Access. The system provides serialized control functions to allow accurate tracking of serialized items such as Automobile license plates. The system includes the following major features:

- Full supply inventory tracking
- Full management of customers, vendors and contacts
- Automated Delivery order development and tracking
- Full Supply Action Request generation with full detailing
- Full Serialized Item Verification and Control systems
- Full reporting for all function

The system has been developed entirely within the Microsoft Access Development environment. All parts of the system are fully integrated and ease of use has been a primary objective throughout its development.

KTCYHA Project Control and Management System - This is a full Remote Location Project Management system that allows the Client, Kasigluk Tribal Council Yupik Housing Authority to plan, budget, Manage and track various housing development projects. A Key feature of the system is Its ability to maintain duplicate data sets at the village and in Anchorage to allow Anchorage based staff and consultants to function effectively and act as liaisons with funding and regulatory agencies. The system includes the following major features:

- Company, People and Contact Manager with Unlimited Company Classification System
- Automated Standard Correspondence Generator
- Automated Project Phase and Task Scope Generator
- Automated Project Resource/Estimate Generator
- Automated Project Schedule / Gantt Chart Generator
- Task Based Check Listing and Assignment Tracking System
- Library / Document Index with Unlimited Document Classification System
- Fully Integrated Time Sheet Entry
- Fully Integrated Equipment Expense Tracking
- Front Line Project Expense Entry
- Time and Expense Checking and Verification System
- Construction Supervisor Daily Report Generator
- Construction Bid Tab and Work Scope and Construction Specification Generation System

The system has been developed entirely within the Microsoft Access Development environment. All parts of the system are fully integrated and ease of use has been a primary objective throughout its development.

Rabbit Creek Subdivision Property Management System –This system provided for the accumulation and tracking of detailed property information for a fully developed subdivision that is being replated to adjust the property lines of about 300 lots in the subdivision due to a surveying error in the original subdivision survey. The system includes the following major features:

- Owner and Interested Entity Data Entry and Tracking
- Full Flexible linking of any Property with any interest Entity such as Owner, Occupant Mortgagee or Easement Holder Etc.
- Tracking of all Documents involved with any interest in any property
- Full reporting for all function

The system has been developed entirely within the Microsoft Access Development environment.

Mental Health Trust Project Time Tracking DataBase This project involved the development of a Time and activity tracking system to provide financial controls and reporting on MHT projects. The system includes the following features:

- Simple daily time sheet interface
- Automatic duplication of repeat data
- Full project Lookup
- Reports summarized by multiple criteria

Alaska Legal Services Case Management Database This project involved the development of a comprehensive system to accommodate the needs of their 4 statewide offices. The system includes the following features:

- Full client management with instant conflict checking
- Case management with Funding Source tracking
- Two level classification systems for clients and cases
- Pro-Bono Attorney management and tracking system
- Case worker time tracking system
- Client income and Net worth calculation system.

ANMC Hospital Equipment Transition Database This system was designed to facilitate the transition of existing equipment and the purchase of all required new equipment for the new ANMC Hospital. The system served as a basis to inventory and tag all existing equipment and negotiate with the various hospital departments to allowed new purchases within the $15 Million budget.

The system is required to generate standard government purchasing documents detailing complete detailed purchase specifications for all new equipment including required accessories, finishes, training, warranties, inspections and installation. The system must facilitate tracking of each item with it's various components through purchase request, purchase order, vendor acknowledgment, vendor shipping, freight consolidation, site receiving, temporary warehousing, inspection, assembly, installation, and final location delivery with final room by room close-out audits. Full budget tracking and reporting is also required of the system.

DEC Financial Assistance Program Database Conversion – This project involved the replacement of an exiting "Revelation" Database with new Database modules integrated into a Microsoft Access database developed by The EPA for use nationally. The system provides the following features:

- Accumulation and organization of all grant information
- Links to facility owners, applicants, consultants, contractors and other interested parties.
- Full tracking of all amendments and payments to grants
- Tracking of grant status and required correspondence
- Full reporting for all functions.
- Comprehensive User Guide

Alaska Business Systems Inventory and Service Order Control System – This project involved the development of a new custom system to automate and integrate all critical functions for a copy machine sales and service organization. This system includes the following major features:

- Full parts and supply inventory tracking
- Automated purchase order development and tracking
- Full work order generation with Parts and Labor detailing
- Database replication allowing full data access for technicians in the field
- Car-Stock inventory tracking
- Customer Invoicing
- Machine service history and contract maintenance
- Full reporting for all function

North Slope Borough Facilities Maintenance Database - This system was developed for the North Slope Borough to compile a database of all of the facilities owned by the Borough and analyze the current and ongoing maintenance requirements for the each of the facilities. Cost estimates were generated for all current maintenance requirements. This project involved several thousand facilities that were inspected, analyzed and estimated. The system was

developed in the 4th Dimension database development environment on Apple Macintosh computers.

Barrow Gas Field Technical Library Index Database -This system was developed for the barrow gas fields to compile a comprehensive index of all documents in their technical library. The system provided a simple user interface that allowed any one in the organization to use the system to find a document using simple predefined keywords. Once found the item was checked out so that the documents could be tracked and located if needed. The system was developed in the 4th Dimension database development environment on Apple Macintosh computers.