Derrick Tobias Babb

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OPERATIONAL STREAMLINING

Business Partner IBM™
Authorized Software Value Plus
Tivoli

OBJECTIVE

Engage in business process optimization through the application of Industrial Engineering within the context of Maximo Oil & Gas implementations. My portfolio includes IBM Advanced Deployment Professional certification for Maximo Asset Management V7.5, 6+ years of Maximo development experience in the Energy and Utilities sector, the ongoing development of distinct Maximo business accelerators and a strong optimization background. Furthermore, I have streamlined my development process to encompasses effective requirements gathering, prompt establishment of the customer feedback loop, a portfolio of recurring Maximo design patterns that accelerate delivery, a hybrid model\test-driven development approach that ensues quality design, collaborative lifecycle management using Rational products, and an extensive lab-style development platform based on VMware vSphere.

EDUCATION

Doctor of Computer Science
University of Central Florida, Orlando
(ABD)

Doctor of Industrial & Systems Engineering
University of Florida, Gainesville
(ABD)

Master of Science in Computer Science
University of Central Florida, Orlando
12/05

Master of Science in Industrial & Systems Engineering
University of Florida, Gainesville
8/11

Bachelor of Science in Mathematics
University of Florida, Gainesville
8/11

Bachelor of Arts in International Business
Rollins College, Winter Park
5/02

PROFESSIONAL CERTIFICATION

IBM Certified Adv. Deployment Professional - IBM Service Management Asset Management V5
IBM Certified Infrastructure Deployment Professional - Maximo Asset Management V7.5
IBM Certified Deployment Professional - Maximo Asset Management V7.5
IBM Certified Deployment Professional - Tivoli Process Automation Engine V7.5
IBM Certified Solutions Expert - Collaborative Lifecycle Management V4

PROFESSIONAL EXPERIENCE

Operational Streamlining \ Founder & Principal Consultant \ February 2014 to Present
For the past year I have been working as a subcontractor for Interloc Solutions at Enbridge Energy, leading development of their Maximo implementation and delivering innovative solutions to unique business challenges. I am continuing to build up my expertise and relationships in this industry in order to launch an analytic SaaS portal for Maximo.

Senior Maximo Developer for Interloc Solutions at Enbridge Energy \ April 2014 to Present

Inspection Work Order Automation

- Implemented a process to create and maintain preventative maintenance (PM) records for compressor\driver asset pairs to meet complex inspection requirements. These PM records incorporate complex mechanical job plans, are triggered using a virtual run hours meter, and are hierarchically structured.
- The process not only creates and maintains the PM records, but also ensures that meters used in the job plans are attached to the asset meter groups and that measurement points are configured for all asset\meter pairs. The latter feature by itself maintains 108,000+ measurement points that ensure critical meter readings captured on work orders are recorded on the asset meter reading history. This task would have been all but impossible to accomplish without customization.
- The process leverages parallel computing techniques adapted for Maximo to reduce the initial build process from almost a week to 24-32 hours. The same techniques enable daily maintenance to run expeditiously for all assets.
- Other features of this project included a daily report that enabled the support staff to review the configuration for all assets to ensure completeness, to quickly spot and resolve configuration issues, a work order generation forecast for each compressor\driver pair based on run hours, and the ability to define inspections job plans at either the item master or asset level for fine-grain control.

Driver Oxygen Sensor Calibration\Change Automation

- Oxygen sensors on driver assets must be either calibrated or replaced every ninety days for the purpose of regulatory compliance. Whether these sensors can be calibrated or replaced depends on the model of driver. Sensors can be calibrated or replaced either through a standalone work order or as part of an inspection\overhaul embodied by complex mechanical job plans developed for these assets. The goals for this project were to reduce unnecessary work by capturing the latest calibration\replacement while simultaneously helping to ensure compliance using automated work order generation to meet this regulatory requirement.
- Implemented process that maintains the last oxygen sensor calibration or replacement date per asset using a combination of extensions to the work order MBO and a listener to the meter reading table to capture either the completion of a standalone work order or related task in a job plan, respectively.

- Other features of this projects included a daily cron task that computed time remaining before the next required action, generated work orders two weeks before the next required actions if none exists, and produced a daily report to both help the customer drive towards 100% regulatory compliance as well as to furnish to auditors.

Virtual Asset Run Hours Meter

- Rewrote the process used to track run hours for assets. Many assets do not have a physical run hours meter, however the accurate tracking of run hours is crucial for driving inspection automation.
- Run hours are derived from the combination of asset operating status changes and downtime records, and are recorded as a daily continuous meter reading.
- Decoupled and rewrote the run hours calculation logic to be effortlessly leveraged by both a cron task that generates daily meter readings, a real-time update mechanism that launches in the background to robustly handle historical record changes and comprehensive, injection-style unit testing.

Job Plans

- Leveraged template concept that I had earlier devised to simplify mechanical job plans.
- Implemented a standalone tool that allowed us to import, seed, manipulate, consolidate, and export complex mechanical job plans with extensive use of meters directly to Maximo.
- The tool transformed an exhausting, multiday effort involved in developing a new job plan into a few hours of effort.
- The tool enabled better management using consolidated templates as well as the seamless generation of fine-grain, asset specific job plans with the correct number of job plans tasks. In some cases the number of tasks were reduced by over 50%, leading to both time-savings and reducing frustration for users in the field.

Asset Operating Status

- Devised process that eliminated 47% of existing work orders (721 to 380).
- Initially the customer was using work orders to track various standby statuses for assets, which when combined with downtime records are used to calculate asset availability and reliability.
- The new process made the obvious change to tracking this information via the asset and extended the record with a new operating-specific status with three states when the asset was operating.
- Implemented a dialog that simplified the toggling of the asset operating status as well as tracking ancillary details relevant to the process via the Asset application.
- Implemented multiple dialogs that were embedded in the work order workflow to capture asset operating status changes based on the creation and completion of work orders.

- Implemented a dialog similar to that used for downtime management to enable editing the historic asset operating status records.

Redesign & Remediation

- Eliminated hundreds of thousands of poorly configured meters, measurement points, job plans and preventative maintenance records.
- Instituted item master and meter group concepts to better maintain a heterogeneous fleet of compressor and driver assets. Aggregated existing make, model and other specifications from existing assets to seed item masters. Performed groundwork to enable customer to leverage the Inventory module.
- Developed a toolbox of 14 implementation, 36 remediation and 6 data preparation specific RMI-based tools tailored for the customer. This included a custom data loading tool that significantly expedited the process of gathering and implementing assets and locations, configured with item masters, specifications and other attributes.

February 2014 to April 2014

Maximo Streamlining

- Developed expertise in unit testing using JUnit and Mockito, integration testing using JMS and SOAP-based test doubles, and end-to-end testing using Selenium.
- Developed an extensive lab-style development platform. Self-contained development image templates are available for Maximo 6.2, 7.1, 7.5 and the various extensions—ACM, transit, linear, and others. The templates use WebSphere as the application server. They are designed to be cloned and placed into immediate operation. They can be leveraged both for internal development as well as external client involvement—such as agile development acceptance testing. The platform leverages a high-performance SSD array, is housed at the high-speed Fortrust data center in Denver, is firewalled, accessed via VPN, based on VMware vSphere and is highly adaptive.

IBM Corporation \ August 2008 to February 2014

Lead Maximo Developer at NiSource \ November 2009 to February 2014

- Implemented 63 enhancements and 65 revisions involving the user interface, external system integrations, and back-office data handling.
  - After 300 days of operation, one back-office enhancement that now automates PO closure has handled $50,000,000 in POs, representing $500,000 in freed working capital and saving the labor required to manually close 6,000 POs—saving at least one FTE annually.
  - Another back-office enhancement implements a framework for defining criteria to automate receipting of invoices that are received from the Catalyst external system operated by BNY Mellon. Since its introduction 4 year ago, this enhancement has generated 150,000 receipts representing $70,000,000—again, saving at least one FTE annually.

  - Developed a SOAP-based web-service from the ground-up that enables offline receiving of materials in the field. The solution was achieved by connecting a custom Excel spreadsheet with the web-service via SOAP and connecting the web-service with Maximo via RMI. The initial design leveraged the Maximo Integration Framework, however this was found to bypass user restrictions due to the hardcoded usage of the MAXADMIN user in Maximo 6.2. The web-service was reimplemented from the ground-up using RMI to connect with Maximo, allowing operations to be performed as the invoking user, and deployed alongside Maximo on the application server.
  - Implemented a user interface application that allows Supply Chain to quickly determine the invoice-receipt state of a purchase order by line.
- Maintained 245 individual source files representing 40,413 lines of code as well as 16 reports.
- Independently maintained an IBM Rational Team Concert (RTC) implementation to manage change promotion across 5 environments as well as Production changes introduced during a system upgrade spanning 10-months. Additionally, I prepared an extensive proposal to implement RTC within the enterprise based on the performance of this system.
- Implemented and trained the development team to follow a Model-Driven Design process using IBM Rational Software Architect.
- Maintained workflow and TRM Rules Manager for the Procurement module—this spanned the Purchase Requisition, Request for Quotation, Purchase Order, Invoice and Receiving Applications.
- Maintained 14 out of 23 total external system integrations. This included maintaining a custom punchout application that interfaces Ariba vendor sites with the Purchase Requisition application.
- Maintained 5 environments—Development, System Test, User Test, Production and Training—encompassing 18 servers and 20 Maximo instances. The Production environment supports 2000+ users. I developed a deployment tool consisting of 75 scripts to administer these environments and handled change promotion activities.
- Developed a testing tool that generates business objects based on an existing population. This tool has helped to identify anomalous behavior in changes before promotion to Production that were the result of bad data and would have otherwise been missed by unit\system\user testing.
- Technical lead for Maximo 6.2.2 to 6.2.6 upgrade:
  - Migrated Java customization and screen configurations.
  - Developed gold image for deployment.
  - Operated Maximo and TRM Rules Manager upgrade tools.

  - Refined database upgrade subprocess.
  - Debugged upgrade issues.
  - Developed 33-page upgrade document.
  - Performed Production upgrade.
- Developed extensive project plan for Maximo 6.2.6 to Maximo 7.5.1 upgrade.
- Developed extensive understanding of the core Maximo 6.2 source code, debugging and performance testing practices. Collaborated in the remediation of several software bugs with the IBM Maximo Development Team before Maximo 6.2 end-of-service.
- Trained four global resources to perform Maximo development.
- Proficient with Oracle 10g and SQL in general.
- Familiar with both WebLogic and WebSphere.

Project Manager & GIS Developer at NiSource \ July 2009 to November 2009

- Led four-person team in knowledge transfer for multi-year ESRI ArcGIS implementation.
- Played key role writing and winning $2,750,000 support contract.

GIS Developer at NiSource \ August 2008 to July 2009

- Aided GIS implementation team with planning and development.
- Distilled ad-hoc system build and maintenance processes into soundly documented, optimized processes.
- Implemented ArcObject-based tools that enhanced build and manageability.
- Built complex pre-production GIS environments.
- Identified and mitigated project risks.

NASA Marshall Spaceflight Center

Intern \ May 2008 to July 2008

- Developed novel mathematical model of composite-overwrapped pressure vessels using strain data from optical fiber Bragg grating sensors.
- Employed complex geometric analysis, numerical calculus and non-linear optimization.
- Implemented prototype in C++ on UNIX using open-source nonlinear optimization software with OpenGL visualization.
- Won Second Place for research among engineering interns.

University of Florida

Graduate Research Assistant (GRA) \ January 2008 to May 2008

- Implemented three-stage, eleven-objective optimization framework for NP-Hard scheduling problem in C++.

- Integrated CPLEX via Concert C++ technology for solving large-scale mixed integer linear programs.
- Produced quality approximations to large-scale problem instances.

University of Central Florida
Graduate Research Assistant \ Florida Department of Transportation \ January 2004 to August 2007

- Secured $100K research and development contract.
- Led collaborative effort between Florida Department of Transportation, University of Central Florida and the Center for Urban Transportation Research at the University of South Florida.
- Implemented high-performance sequential as well as parallel scheduling and routing algorithms.
- Developed statistical models for origination\destination demand pairs based on real paratransit service data.
- Utilized open-source software, relational databases, OpenGL-based visualization and MPI for high-performance computing on a 32-node Sun Fire cluster computer.
- Produced quarterly and final technical reports.

Graduate Research Assistant \ National Science Foundation \ August 2006 to March 2007

- Developed prototype for product design expert system based on paper published by team under tight time constraints and demoed prototype at national conference.

OTHER QUALIFICATIONS

TEST SCORES

GRE (June 2011): 730 Verbal, 760 Quantitative

SELECTED HONORS AND AWARDS

2006-2008	Robert D. Kersten Fellow
2000	Clint Foundation Scholar
1999-2002	Florida Bright Futures Scholar
1999	Eagle Scout

TEACHING EXPERIENCE

Spring 2005 Graduate Teaching Assistant and Lab Instructor. COT 3100: Introduction to Discrete Structures. School of Computer Science, University of Central Florida.

Spring 2003 Graduate Teaching Assistant. CDA 5106: Advanced Computer Architecture. School of Computer Science, University of Central Florida.

PUBLICATIONS

D. Babb (2008). "Composite-Overwrapped Pressure Vessels: Towards High Resolution In Situ Structural Health Monitoring Using Optical Fiber Bragg Grating Sensors." *Poster*.

K.I. Meza, L.L. Crumpton-Young, C.D. Geiger, R.L. Hoekstra, S.E. Schubert, D.T. Babb, "The Development of a Conceptual Design Environment to Support User Centered Design Considerations," 2007 International Conference on Design Principles and Practices, Imperial College London University, London, England, Jan 4-7, 2007.

K. Meza, S. Schubert, D. Babb, H. Eskandari, L. Crumpton-Young, C. Geiger, R. Hoekstra, "Towards the Development of a Conceptual Modeling Multi-Criteria Analysis Environment to Support User Centered Design", 2007 Institute of Industrial Engineers Annual Research Conference, Nashville, TN, May 19-23, 2007.

D. Babb (2005). "Vehicle Routing Problem with Time Windows Pickup, Transfer, and Delivery: Introduction and Initial Approaches." *Internet Draft*.

D. Babb (2005). "Pickup and Delivery Problem with Time Windows, Coordinated Transportation Systems: The State of the Art." *Internet Draft*.

KEY COURSES AND TRAINING

Computer Science
COT 5404 Design and Analysis of Algorithms
CDA 5110 Parallel Architecture and Algorithms
COP 5537 Network Optimization (Graph Theory)
CDA 5106 Computer Architecture I
CDA 6107 Computer Architecture II
CDA 5501 Network Design I
CDA 6520 Network Design II
CAP 5636 Artificial Intelligence
CAP 5415 Computer Vision
CAP 5512 Evolutionary Computation
COP 6731 Advanced Database Systems
EEL 5937 Multi-Agent Systems

Industrial Engineering
ESI 6546 Stochastic Modeling and Analysis
ESI 6912 Fundamentals of Mathematical Programming (Nonlinear)
ESI 6417 Linear Programming and Network Optimization
ESI 6418 Linear Programming and Extensions
ESI 6321 Applied Probability Methods in Engineering
ESI 6358 Decision Analysis
EIN 6425 Scheduling & Sequencing
EIN 5140 Project Engineering
ESI 5531 Discrete System Simulation

EIN 6336 Production and Inventory Control
EGN 5858C Rapid Prototyping and Product Realization

Mathematics
MAP 5304 Intermediate Differential Equations
MAA 4211 Advanced Calculus I
MAA 4212 Advanced Calculus II
MAS 4301 Abstract Algebra
MAD 4401 Numerical Analysis
MAS 3106 Linear Algebra
MAP 2302 Differential Equations
MAC 2313 Calculus & Analytic Geometry III

ORGANIZATIONS

GOMaximo
Institute for Operations Research and the Management Sciences (INFORMS)