

EDUCATION

Ph.D., Information Technology, George Mason University, 2004

MS, Information Systems, Virginia Commonwealth University, 1999.

BS, Information Systems, Virginia Commonwealth University, May 1983

TEACHING

AIT 580 Analytics: Big Data to Information, George Mason University, Spring 2012 – present

- Created course and provided initial offering
- Seminar style shaped in the mold of Big Data Intelligence Systems Lecture Series I (see below)
- Several world-class speakers participate to lend expert knowledge in Big Data

AIT 582 Applications of Metadata in Complex Big Data Problems, George Mason University, Fall 2014 – present

- Created course and provided initial offering
- Course explores technical and analytical issues, solutions and gaps in processing large volumes of data by leveraging metadata.

AIT 622 Determining Needs for Complex Big Data Systems, George Mason University, Fall 2014 – present

- Created course and provided initial offering for Distance Education
- Explores advancing Big Data Systems Engineering methodologies to streamline efforts to gain consensus with regards to system needs among stakeholders that have different perspectives and competing objectives.

INFS 622, Advanced Information Systems Analysis and Design, George Mason University, Spring 2005 – Spring 2014

Core foundation course for the:

- Volgenau School of Engineering's Computer Science and Applied Information Technology, Master's Degree programs
- Health Administration and Policy Information Master's Degree program

PRESENTATIONS AND WORKSHOPS

“Expanding Big Data Science: Forward and Backward” presented at:

- Federal Big Data Working Group Meetup, May 20, 2014
- Guest Lecture for MSEC-640, Privacy & Ethics in an Interconnected World, George Mason University, Recurring

“Working with Big Data Changes”, Big Data Series Workshop #4, George Mason University, Recurring

“Technology Trends, Big Data and Data-Driven Decisions”, Guest Lecture for Business Acumen for DS Professionals, George Mason University, April 4, 2013

“Soft Data Science”, Guest Lecture, Multiple and Recurring Venues

“Big Data, Data Science & Big Data Science Analytics – A Survey”, Guest Lecture for IT-293 Junior Career Guidance, George Mason University

ADVISING AND MENTORING

- Former Member, Board of Advisors, The National Association Of Veteran-Serving Organizations, <http://www.navso.org/>
- Assist with students with majors, Ph.d Topics and strategies, but send them to advisors too
- Advise on career paths
- Coach on public speaking and point students to campus related groups such as Toastmasters
- Help shape resumes (but send them to the Writing Center as well)
- Provide recommendations to diligent students
- Setting up and connecting students with internships

PARTNERING EDUCATION WITH GOVERNMENT AND INDUSTRY

- Expert Panel, United States Department of Transportation's Electronic Freight Manifest Initiative.
- Formed and ran the Massive Analytic Working Group through Mason, Intelligence Community and commercial companies
- Train, educate and network on Big Data and Data Science topics
- Co-Organizer of Big Data Intelligence Systems Lecture Series I sponsored by Mason's Intelligence & Security Research Center (ISRC), Fall 2011
- Co-Organizer of Big Data Intelligence Systems Lecture Series II sponsored by an Intelligence Community member and Mason
- Speaker at Big Data Intelligence Systems Lecture Series II sponsored by an Intelligence Community member and Mason
- Connect businesses with clients' needs as appropriate through Mason

APPLIED RESEARCH IN PROGRESS

- Convergence of Cyber, Big Data, Data Science
- Using Models as Metadata Decision Making, Risk Analysis and Value Propositions in Cyber, Big Data and Data Science
- Metadata and Advanced Workflow methodologies
- Intelligent Complex Adaptive Systems
- Codifying and leveraging non-obvious aspects in technology environments
- Leveraging the convergence of Leadership, Bureaucracy, Technology and Analytics

PUBLICATIONS

R. Howard and L. Kerschberg, "A Knowledge-based Framework for Dynamic Semantic Web Services Brokering and Management," presented at Database and Expert Systems Applications (DEXA) 2004, WebS Workshop, Zaragoza, Spain, 2004

R. Howard and L. Kerschberg, "Brokering Semantic Web Services via Intelligent Middleware Agents within a Knowledge-Based Framework," presented at Intelligent Agent Technology (IAT 2004), Beijing, China, 2004

R. Howard and L. Kerschberg, "Using Facets of Security within a Knowledge-based Framework to Broker and Manage Semantic Web Services," presented at Secure Knowledge Management (SKM 2004), Amherst, New York, USA, 2004

R. Howard and L. Kerschberg, "A Framework for Dynamic Semantic Web Services Management," Special Issue on Service Oriented Modeling, *International Journal in Cooperative Information Systems*, December, 2004

R. Howard and L. Kerschberg, "Dynamically Managing the Delivery of Web Services via Workflow and Feedback," presented at International Conference on Information Systems (ICIS) 2004 e-Business (Web2004) Workshop; Washington, DC, 2004

PUBLICATIONS IN WORK

Co-Editor and Contributor, “Big Data Intelligence Systems Leadership and Operation Executive Lecture Series I: Compendium and Analytics Summary”

R. Howard, “Retooling yourself to be a Big Data Scientist”

R. Howard, “Sufficiency in Big Data Science Analytics”

R. Howard, “Soft (vs. Hard) Big Data Science Analytics”

R. Howard, “Engineering and Operating via a Decision Sextant”

R. Howard, “CALC Modeling for Big Data Science Analytics”

R. Howard, “Soft Big Data Science”

R. Howard, “Social Systems Engineering”

R. Howard, “Modeling (and Bridging) the Systems Engineering and Operational Environments”

R. Howard, “Reverse Engineering Knowledge Management Impact on Software Quality Assurance”

TRAINING

Six Sigma, Supervisory Leadership Institute, Total Quality Initiative, Dale Carnegie Institute

ASSOCIATIONS

PMI, ScrumAlliance, IEEE, ACM, Beta Gamma Sigma

HONORS AND AWARDS

Professional:

- Technical Fellow, TASC/Engility, 2016
- George Mason University 2016 Adjunct Teaching Excellence Award Winner
- George Mason University Nominee Teaching Excellence Award (2012, 2015)
- Co-Nominee Enterprise Information Technology (EIT) Award (as part of the Big Data Lecture Series Team) (2013)
- Chesterfield County Information Systems Technology Employee of the Year (1997)

Academic:

- Beta Gamma Sigma (since 1999)
- Laurels Honor Society (since 1983)
- Top Ten in High School Graduating Class (1979)
- Beta Club (1979)
- Who's Who Among American High School Students (1979)

PROFESSIONAL EXPERIENCE HIGHLIGHTS

Principal Data Scientist, Architect, Engineer and PMP with Ph.D. in data, information, knowledge, intelligence and wisdom engineering of agent and services based architectures and systems, with emphasis on Big Data and Data Science. Leads strategic-to-operational design and development group for enterprise data warehouse, data/metadate architectures, and intelligent solutions. Develops partnerships between academia, corporate and government stakeholders. 30+ years of technical and business experience across many platforms and all phases of the system development life cycle, and leading people to deliver mission-critical enterprise-impacting systems. Author and international speaker.

Development Languages/Systems/Products: R/R-Studio, Hadoop/MapReduce Ecosystem, Java, Python, Tableau, ASP, JAVASCRIPT, HTML, .NET Visual Basic, COBOL, EasyTrieve Plus, SOAP, WSDL, Dr. C. Randall Howard, PMP – Curriculum Vitae

UDDI, CSS, Windows NT/XP/2K/2K3 Pro and Server, UNIX/LINUX, MAC OS, Novell Netware, ORACLE, SQL Server, MySQL, MSACCESS, Dbase, DB/2, Postgres, Microsoft Office, Balsamiq, Federal Enterprise Architecture (FEA), Federal Enterprise Architecture Framework (FEAF), Federal Segment Architecture Methodology (FSAM), Department of Defense Architecture Framework (DoDAF), Integrated Definition (IDEF*), SCRUM Methodologies, System Architect, Java, J2EE, Websphere, Visual Studio, Access, DB2, UDB2, COBOL, VSAM, CICS, SQL, SQL Server, Microsoft Office, Microsoft Project, Visio, ERWin, Dreamweaver, Front Page, Lotus Notes, Telelogic, Cognos, Business Objects, Oracle Warehouse Builder, Web development, Web Services, Active Server Pages (ASP), JavaServer Pages (JSP), ActiveX, VBScript, Javascript, XML, XSLT, Microsoft IIS server, Kencast Fazzt script Object-Oriented Analysis and Design (OOA/D), Structured Systems Analysis and Design, IBM, Sun, Oracle, Unisys, HP3000, Data General, Unix, OS/2

PROFESSIONAL EXPERIENCE

2014 TO PRESENT **TECHNICAL FELLOW, SENIOR DATA SCIENTIST**

TASC/ENGILITY, INC.

Support data aspects of developing capabilities for the Internet of Things (IoT) ecosystem. Support and mature Data Science practices for Intelligence Community customer.

Guide efforts to integrate advanced data ecosystems into seamless operational environments that require loosely federated partners semantically interoperating on the data. Work with DoD branches to define data strategy and data science needs for tactical operations. Extend collaborations between USG communities.

2005 TO PRESENT **ADJUNCT PROFESSOR, INFORMATION SCIENCES AND TECHNOLOGY DEPARTMENT
TECHNICAL SUPPORT STAFF, GOVERNMENT SERVICES PROGRAM**

VOLGENAU SCHOOL OF ENGINEERING, GEORGE MASON UNIVERSITY

Develop and deliver Big Data and Data Science courseware. Initiate and structure Big Data and Data Science educational programs for Mason and Intelligence Community agency. Co-develop and run Lecture Series for Big Data, Cyber, Digital Innovation, Digital Literacy, and Data Science themes.

2014 TO 2014 **SENIOR DATA SCIENTIST**

NOVETTA SOLUTIONS

Lead efforts to recommend Data Management and Strategy for clients to transition to data-driven operations across multiple levels of information security enclaves.

2013 TO 2014 **PRINCIPAL DATA SCIENTIST**

BERICO TECHNOLOGIES, LLC

Lead efforts to implement Big Data and Data Science practices. Educate and train fellow and future Big Data Scientists. Develop methodologies to streamline workflow processes to implement and operate both technical and non-technical Big Data technologies and techniques across multiple levels of information security to support classified operations. Formulate methodologies to harden these workflow processes into formal methodologies and tools.

2010 TO 2013 **PRINCIPAL SEMANTIC AND KNOWLEDGE SCIENTIST**

BOEING / SOLUTIONS MADE SIMPLE, INC. (SMSI)

Develop strategic-to-operational guidance for major enterprise architectural initiatives that involves heavy research, prototyping, proof-concepts and collaboration. Launch partnership endeavors between academic, corporate and government stakeholders and experts. Develop Enterprise Data Architectures and Models. Lead and participate in efforts to shape establishing Big Data Science and Analytics practices into a large organization. Define enterprise and segment architectures, specializing on data and

service aspects, within an Intelligence Community environment. Research and document baseline and future capabilities to establish baseline and target architectures, respectively, as well as develop the associated transition plans and roadmaps. Create functional and service models, along with prototypes and proof-of-concepts, for major multi-million dollar development and acquisition efforts enterprise and segment architectures, specializing on data and service aspects, within an Intelligence Community environment.

2007 TO 2010

PRINCIPAL CONSULTANT

SRA INTERNATIONAL, INC. / Raba Technologies

Define enterprise and segment architectures, specializing on data and service aspects, within an Intelligence Community environment. Research and document baseline and future capabilities to establish baseline and target architectures, respectively, as well as develop the associated transition plans and roadmaps. Develop Enterprise Data Architectures and Models. Create functional and service models, along with prototypes and proof-of-concepts, for major multi-million dollar development and acquisition efforts.

2004 TO 2007

VICE-PRESIDENT OF ENGINEERING

TECHI2, LLC

Led design and development of enterprise scale metadata architectures and intelligent applications for knowledge enabling agent and services based architectures. Developed Integrated Metadata Repository using ASG Rochade and led implementation of semantically defined XML namespace for major DoD functional areas. Established enterprise data environment and service-based data interfaces to provide applications standards-compliant and governance-based access to data. Designed ETL processes. Performed Independent Verification and Validation (IVV) of Enterprise Data Warehouses and Data Marts.

2002 TO 2004

PRINCIPAL SOFTWARE ENGINEER

RAYTHEON, INC.

Led development of J2EE/COTS satellite digital delivery system for the Global Broadcast Service (GBS) that worked with Websphere, and JBoss Application Servers. Developed engineering processes. Facilitated object-oriented analysis and design sessions. Supported Capability Maturity Model - Integration (CMMI) and Earned Value Management System (EVMS) activities. 2003 Quality Conference Speaker.

2001 TO 2002

SOLE PROPRIETOR

CHARLES R. HOWARD CONSULTING

Developed functional data management (FDM) processes to meet data management and Interoperability (DMI) enterprise-wide requirements for the United States Marine Corps and Department of Navy to align with Department of Defense specifications for the C4ISR Architecture Data Model (CADM) and XML services. Performed detailed architectural analysis to develop multi-tiered J2EE enterprise information architectures using an Oracle suite of tools. Developed complex datamodels for semantic web applications. (TECHI2 LLC).

Customized search and classification applications that implement Knowledge Management taxonomies and ontologies. (SAIC). Developed PeopleSoft ETL from legacy applications. (Quantico Marine Corps Community Services). Develop and implement major enhancements, such as an intelligent purge and RADIX meter-reading interface upgrades, to the water/sewer billing system. (Fulton County Department of Finance).

2000 TO 2001

PROJECT LEAD

VERIZON, INC.

Lead architecture and standards activities to provide support utilities such as dynamic meta-data and component mappings between the SmallTalk and mainframe DB2 environments. Lead problem resolution efforts for telecom provisioning system and represent the application area for status on issues to the clients. Developed automated bridge between Lotus Notes database, Access, and Excel for management reporting and process improvement activities.

2000 TO 2000

PROJECT LEAD

VERIO, INC.

Lead effort to replace MRTG-based reporting with Desktalk's SNMP-based Trend in a Unix, CGI, Perl, Oracle, Sybase, and Java environment. Involved in establishing a new division's Object-Oriented Analysis and Design (OOA/D) development processes.

1998 TO 2000

PROJECT MANAGER/SENIOR CONSULTANT

BEACON ENTERPRISE SYSTEMS, INC.

Developed and maintained web-based ASP applications to connect to UDB2 and Access. Designed and developed commercial e-business software using Object-Oriented Analysis/Design, Entity Relationship Diagram data modeling, and Rapid/Joint Application Design techniques. Delivered Fulton County, Georgia water billing system Year 2000 changes two months ahead of contract schedule. Coded and tested conversion programs for Puerto Rico Aqueducts and Sewer Authority's 1.2 million-customer base DB2/CICS utility billing system.

1988 TO 1998

APPLICATIONS TEAM LEADER

CHESTERFIELD COUNTY, VA DEPARTMENT OF INFORMATION SYSTEMS TECHNOLOGY

Performed business studies, long range planning and evaluation of new technologies to meet emerging business needs for Utilities Department, School Information, Real Estate Assessment, and Real Estate Accounts Receivable departments. Supervised and performed requirements, analysis, design, development, ETL and support efforts for team consisting of part-time and permanent staff and contractors. Wrote performance evaluations and provided input to hiring and termination processes. Developed and monitored project work plans and budgets for IBM mainframe and client/server projects that range from minor maintenance to multi-million dollar efforts. Participated in RFP and bid-award processes for multi-million dollar technologies. Coordinated and communicated project efforts with customers and management. Designed and developed software using Object-Oriented Analysis/Design, Entity Relationship Diagram data modeling, and Rapid/Joint Application Design techniques. Designed and implemented data management applications to synchronize mainframe, server-based, and field-data collection data stores. Delivered five major enterprise-wide impact projects and lead five concurrent Year 2000 conversion projects in one year. Lead the Standards Team for technology standards of the county. Lead and participated in Total Quality Improvement processes. Awarded 1997 Chesterfield County I.S.T. Employee of the Year.

1983 TO 1988

CONSULTANT, PINKERTON COMPUTER CONSULTANTS

CONSULTANT, JBA, INC.

PROGRAMMER, VIRGINIA DEPARTMENT OF MASD

Performed systems analysis, design, programming and ETL on inventory, invoicing, accounts receivable, distribution management, nuclear power management and human resource systems.