

Nicole Radziwill, Ph.D., MBA

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Professional Profile: <http://www.linkedin.com/in/nicoleradziwill>

Professional Blog with the American Society for Quality (ASQ): <http://qualityandinnovation.com>

Senior/Executive Data Science Leader with 23 Years Cross-Disciplinary Experience in Quality & Software

I WANT TO:

- Build, cultivate, and lead a world-class data science, analytics, & intelligence organization for product development or professional services
- Establish & enforce processes for high-performance data-driven decision making
- Help teams craft compelling stories to deliver high-impact insights from custom research
- Help data scientists, subject matter experts, business analysts, solution architects, cybersecurity professionals, quality professionals, and/or sales engineers achieve their career goals and meet their potential

HIGHLIGHTS

- Author of a popular statistics and data science book used by 20 institutions in the US, Turkey, Mexico, New Zealand, Germany, China, and Hong Kong
- 5 years consulting at C-level on CRM, SFA, ERP, Business Intelligence
- 5 years VP-level experience (supervising up to 120 technical personnel) managing engineers, scientists, analysts, and data pipelines in Python at a national laboratory
- 5 years Director-level experience transitioning team to agile DevOps (10-12 direct reports coding in Python, C++, and IDL on Linux and VxWorks platforms)
- Thought leader with 9 years teaching and publishing in applied data science, machine learning, quality & process improvement, industrial control
 - **Topics include:** Quality 4.0; Production/Operations Management; Data Science, Predictive Analytics, Simulation & Modeling in R; Intelligent Systems & Machine Learning with R; Management & Cybersecurity of Industrial Cyber-Physical Systems; Product Design & Materials Selection; Human-Computer Interaction/ Human Factors & Ergonomics
 - **Technical skills include:** linear and logistic regression, neural networks and deep learning, Bayesian methods, decision trees (CART, CHAID, C5.0, random forests), support vector machines; mostly R but with support from Python, Keras, TensorFlow
- Expert-level in R; Contributor to R-Bloggers since 2015
- Fellow, American Society for Quality (ASQ) since 2012
- I've been programming since I was 6 years old, in languages from BASIC, Pascal, & Assembly to FORTRAN, Java, JavaScript, C, Python, HTML, sed/awk, Perl, R

QUALIFICATIONS

- Highly skilled in strategy and execution across multiple functions, including complex problem-solving integrating perspectives from various stakeholders

- Over 10 years leadership experience and hands-on development of applied machine learning and artificial intelligence systems, and managing and mentoring technical personnel (data scientists, software/electrical/mechanical engineers, scientists)
- Experience with software product management and technical team lead role in enterprise software development
- Experience briefing and developing solutions with executive level clients
- Experience presenting at industry conferences and corporate events
- Ability to communicate very complex technical information to audiences with different backgrounds and skill levels

PROFESSIONAL EXPERIENCE

- **Associate Professor, Department of Integrated Science and Technology**, James Madison University (Harrisonburg, VA) – Fall 2015 to present
- **Affiliate Faculty, University of Malta** – Aug 2012 to present
- **Assistant Professor, Department of Integrated Science and Technology**, James Madison University (Harrisonburg, VA) – Aug 2009 – Aug 2015
- **Management Consultant, National Ecological Observatory Network (NEON)** (Denver, CO) – 2009 to 2010
- **Assistant Director (VP)**, Office of End to End Operations, National Radio Astronomy Observatory Headquarters (Charlottesville, VA) – 2006 to 2009
- **Managing Partner**, Espresso Labs LLC (Charlottesville, VA) – 2009 to 2011
- **Head of Software Development**, Green Bank Telescope (GBT), National Radio Astronomy Observatory (Green Bank, WV) – 2002 to 2006
- **Chief Operating Officer**, Tessellent LLC (Denver, CO) – 2002
- **Senior Solutions Architect & Engagement Manager**, Major Accounts, Nortel Networks Professional Services (NA, Europe, Australia) – 2000 to 2001
- **Software Development Manager**, Rhythms Netconnections (Denver, CO) – 1999
- **Scientific Systems Analyst**, National Oceanic & Atmospheric Administration (NOAA) Forecast Systems Laboratory (Boulder, CO) – 1998 to 1999
- **Project Manager (IT) and Systems Administrator**, Quintet International, Inc. (State College, PA) – 1995 to 1998

CERTIFICATION

ASQ Certified Six Sigma Black Belt (CSSBB) #11952, since 2011

ASQ Certified Manager of Quality & Org. Excellence (CQM/OE) #9583, since 2005

EDUCATION

Ph.D. Technology Management & Quality Systems, Indiana State University (2009)

Graduate Certificate, Human Factors Engineering & Ergonomics, Penn State (2016)

Cybersecurity for Industrial Control Systems 210W courses (2016), Department of Homeland Security (DHS), Industrial Control Systems Cyberemergency Response Team (ICS-CERT)

MBA, Production and Operations Management, Regis University (2004)

M.S. Atmospheric Science (ABD), South Dakota School of Mines & Technology (1998)

B.S. Meteorology, Pennsylvania State University (1995)

North Carolina School of Science and Mathematics (1992)

HONORS & RECOGNITION

National/International

- **Editor**, *Software Quality Professional (SQP)* & Reviewer, *Data Science Journal*
- **ASQ's 40 Under 40 (New Voices of Quality)**, 2016
- **ASQ Fellow**, 2012, highest mark of distinction bestowed by the Society with a personal citation "for outstanding and innovative cross-disciplinary contributions to teaching and research in quality, for promoting social responsibility through quality and process improvement as a form of community service, and for continuing service to the quality profession through ASQ sections, divisions, and interest groups."
- **ASQ Influential Voices** blogger, 2012 - present, <http://qualityandinnovation.com>
- **ASQ's 40 New Voices of Quality**, 2011
- **Epsilon Pi Tau** National Technology Honor Society, inducted in 2009
- **Vice Presidential Hammer Award**, 1999, for supporting contributions to improved data quality and production processes in NOAA GPS Meteorology Group, for "contributions to building a government that works better and costs less" (citation by Al Gore)

THOUGHT LEADERSHIP

81 Refereed Publications since 1999, including:

1. Benton, M. C. & Radziwill, N. M. 2018: Designing Personal Sustainability into Organizational Culture: The Case of Burning Man. Invited chapter in *Handbook of Sustainability: Case Studies and Practical Solutions*. Garren, S. & Brinkmann, R., Eds. New York, NY: Palgrave Macmillan.
2. Radziwill, N. M. & Benton, M. C. 2017: Neurodiversity for Design and Innovation. SXSW, Austin TX, March 12.
3. Radziwill, N. M. & Benton, M. C., 2017: Cybersecurity Cost of Quality: Managing the Costs of Cybersecurity Risk Management. *Software Quality Professional*, September.
4. Radziwill, N. M. & Benton, M. C., 2017: Design for X (DfX) in the Internet of Things (IoT). *Journal of Quality Management Systems, Applied Engineering, & Technology Management (JoQAT)*. 2017(1).
5. Radziwill, N. M. & Benton, M. C., 2017: Evaluating Quality of Chatbots and Intelligent Conversational Agents. *Software Quality Professional*, June.
6. Radziwill, N. M. & Benton, M. C., 2017: Bot or Not? Using Recurrence Maps to Characterize Tweet Interarrival Patterns. <https://arxiv.org/abs/1605.06555>
7. Benton, M. C. & Radziwill, N.M., 2016: Improving Testability and Reuse by Transitioning to Functional Programming. *Software Quality Professional*, June.
8. Radziwill, N. M., Benton, M. C., Boadu, K., & Perdomo, W., 2015: A Case-Based Look at Integrating Social Context into Software Quality. *Software Quality Professional*, December.
9. Radziwill, N. M., Romano, J., Shorter, D., & Benton, M.C., 2015: The Ethics of Hacking - Should it be Taught? *Software Quality Professional*, December.
10. Radziwill, N. M., Benton, M. C., & Moellers, C. 2015: From STEM to STEAM: Reframing What It Means to Learn. *The STEAM Journal* (Claremont, CA), July.
11. Radziwill, N. M. & Benton, M. C., 2013: Burning Man - Quality and Innovation in the Spirit of Deming. *Journal for Quality and Participation*, April, p. 7-11.
12. Radziwill, N. M., & Owens, T. 2013: Tell Me About It: Export Your Lessons Learned to Spark Innovation. *Quality Progress*, October, p. 80. <http://rube.asq.org/quality-progress/2013/10/back-to-basics/tell-me-about-it.pdf>

13. **Radziwill**, N. M., 2006: Foundations for Quality Management of Scientific Data Products. *Quality Management Journal*, v13 Issue 2 (April), p. 7-21.
14. **Radziwill**, N. M. & Benton, M. C., 2016: Design for Neurodiversity (DfN*): A Design for X Process for Alternative Cognitive Styles. HASTAC, Phoenix AZ, May 13.
15. **Radziwill**, N. M., 2015: What Does the 2015 ASQ Future of Quality Report Reveal About Innovation? ASQ Innovation Conference, Charlottesville VA, September 19.
16. **Radziwill**, N. M., 2014: Extreme Innovation - Practical Lessons from Burning Man. ASQ Innovation Conference, Toronto ON, September 20.
17. Kendrew, S., Deen, C., **Radziwill**, N., Crawford, S., Gilbert, J., Gully-Santiago, M. & Kubanek, P., 2014: The First SPIE Software Hack Day. SPIE Software and Cyberinfrastructure for Astronomy, Montreal, Quebec, CA, June 22 – 27.
18. **Radziwill**, N. M., 2014: Five Minute Radio Astronomy Boot Camp. Black Rock Observatory Educational Speaker Series, Black Rock City NV, August 27.
19. **Radziwill**, N. M. & Benton, M. C., 2014: Pseudoscience in the Era of Big Data. Center Camp Speaker Series, Burning Man, Black Rock City NV, August 26.
20. **Radziwill**, N. M. & Benton, M. C., 2013: The Burning Mind Project - Creating a Culture of Radical Innovation in Technology Education. ATMAE Annual Meeting, New Orleans LA, November 21.
21. **Radziwill**, N. M. & Simmons, R. A., 2012: Quality Without Borders – Service Learning for Young Quality Professionals. ASQ World Conference for Quality and Improvement (WCQI), Anaheim, CA, May 23.
22. Simmons, R. A. & **Radziwill**, N. M., 2012: Quality Showcase – Celebrating the Work of Young Quality Professionals. ASQ World Conference for Quality and Improvement (WCQI), Anaheim, CA, May 23.
23. Benton, M. C. & **Radziwill**, N. M., 2011: A Path for Exploring the Agile Organizing Framework in Technology Education. Agile 2011, Salt Lake City UT, August 9, 2011.
24. **Radziwill**, N. M. & Benton, M. C., 2011: Applying the Agile Organizing Framework to Team Management. International Conference on Software Quality (ICSQ), San Diego CA, February 8, 2011.
25. Benton, M. C. & N. M. **Radziwill**, 2010: Using the Agile Organizing Framework to Create Adaptive Learning Environments for Technology Development. ATMAE, Panama City Beach FL, October 29, 2010.
26. **Radziwill**, N. M. & Mitchell, L., 2010: Using the Baldrige Criteria for Observatory Strategic and Operations Planning. SPIE Observatory Operations: Strategies, Processes and Systems III, San Diego CA, June 26 - July 1.
27. **Radziwill**, N. M., 2010: The Baldrige Criteria for Performance Excellence for Quality Management in Observatories. SPIE Modeling, Systems Engineering, and Project Management for Astronomy IV, San Diego CA, June 26 - July 1.
28. **Radziwill**, N. M. & DuPlain, R., 2010: Using Value-Based Total Cost of Ownership (TCO) Measures to Inform Subsystem Trade-offs. SPIE Modeling, Systems Engineering, and Project Management for Astronomy IV, San Diego CA, June 26 - July 1.
29. Crossley, J., DuPlain, R. F., & N.M. **Radziwill**, 2009: Combining Google Sky and the Search Functionality of the Virtual Observatory (VO). Meeting of the American Astronomical Society, Long Beach, California, Nov. 2-5. [Poster]
30. **Radziwill**, N. M., 2008: End to End Operations at the National Radio Astronomy Observatory. SPIE, Marseille France, Jun 23-28.
31. Crossley, J. H., Sjouwerman, L. O., Fomalont, E. B., and N. M. **Radziwill**, 2008: NRAO VLA Archive Survey. SPIE, Marseille France, Jun 23-28. [Poster]

32. **Radziwill**, N.M., 2007: Beyond Usability – Improving Software Quality by Closing the “Expectation Gap”. International Conference on Software Quality (ICSQ), Lakewood CO, October 16-17.
33. DuPlain, R., **Radziwill**, N.M., & Shelton, A., 2007: A Rule-Based Data Quality Startup Using PyCLIPS. ADASS XVII, London UK, September 2007.
34. Crossley, J. H., Sjouwerman, L. O., Fomalont, E. B., & **Radziwill**, N. M. 2007: NRAO VLA Archive Survey. Bulletin of the American Astronomical Society, 39, 961. [Poster]
35. **Radziwill**, N. M., 2006: Cost of Quality (CoQ) Metrics for Telescope Operations and Project Management. SPIE, Orlando FL, May 25-31.
36. DuPlain, R. F. and N.M. **Radziwill**, 2006: Autonomous Quality Assurance and Troubleshooting. SPIE, Orlando FL, May 25-31.
37. **Radziwill**, N.M. and A. L. Shelton, 2006: A Standard Python Environment for Software Applications at the Green Bank Telescope (GBT). SPIE, Orlando FL, May 25-31.
38. **Radziwill**, N.M. and R. DuPlain, 2005: A Framework for Telescope Data Quality Management. Proc. SPIE, Madrid, Spain, October 2-5, 2005.
39. Garwood, R., J. Braatz, P. Marganian and N. **Radziwill**, 2006: GBTIDL – A New Package for Reduction and Analysis of GBT Spectral Line Data. AAS, Washington DC, Jan 2006.
40. Marganian, P., B. Garwood, J. Braatz, N. **Radziwill** and R. Maddalena, 2005: GBTIDL - A New Package for Reduction and Analysis of GBT Spectral Line Data. ADASS XV, Madrid, October 2005.
41. O'Neil, K., A. Shelton, N. **Radziwill**, and R. Prestage, 2005: The Astronomer's Integrated Desktop - A Unified Suite of Applications for Scheduling-Block Based Observing with the GBT. ADASS XV, Madrid, October 2005.
42. **Radziwill**, N. M., M. Mello, E. Sessoms, and A. Shelton, 2004: An Enterprise Architecture for the Green Bank Telescope (GBT). Proc. SPIE 5496, Glasgow Scotland, June 21-26, 2004.
43. **Radziwill**, N. M. and A. L. Shelton, 2004: TWiki as a Platform for Collaborative Software Development Management. Proc. SPIE 5496, Glasgow Scotland, June 21-26, 2004.

Published Source Code (Software):

1. Marganian, P., Garwood, R.W., Braatz, J.A., **Radziwill**, N.M. & Maddalena, R., 2013: **GBTIDL: Reduction and Analysis of GBT Spectral Line Data**. Astrophysics Source Code Library, record ascl:1303.019, March.
<http://adsabs.harvard.edu/abs/2013ascl.soft03019M>
2. Sessoms, E., Shelton, A. & **Radziwill**, N.M., 2004: **DEAP - Data Extraction and Analysis Program**. <http://deap.sourceforge.net>

Textbooks and Textbook Contributions:

1. **Radziwill**, N. M., 2017: **Statistics (The Easier Way) With R, 2nd Ed.** Lapis Lucera, San Francisco CA, 540 pp.
2. **Radziwill**, N. M., 2017: **End-to-End Solved Problems With R: A Catalog of 26 Statistical Inference Examples**. Lapis Lucera, San Francisco CA, 240 pp.
3. **Radziwill**, N. M., 2015: **Statistics (The Easier Way) With R**. Lapis Lucera, San Francisco CA, 536 pp.
4. Moore, D. S., Notz, W. I., & Fligner, M. A., 2014: **Statistics in Practice**. W. H. Freeman: San Francisco, CA. [Contributed 30-chapter test bank and edited inference chapters.]

Invited Talks, Expert Panels, & Workshops/Webinars:

1. (Invited) **Radziwill**, N. M., 2017: The Hidden Value in Quality 4.0: An Integrated Framework for Understanding. Quality 4.0 Summit on Disruption, Innovation, and Change. Dallas, TX, November 14.
2. (Invited) **Radziwill**, N. M., 2017: Adopt the New Philosophy. Quality 4.0 Summit on Disruption, Innovation, and Change. Dallas, TX, November 13.
3. (Invited) Benton, M. C. & **Radziwill**, N. M., 2017: Burning Man Principles in Higher Education. Burning Man Education Symposium, San Francisco CA, November 8.
4. (Invited) **Radziwill**, N. M., 2017: Quality-Driven Innovation in Systems and Software. American Society for Quality (ASQ) Washington, DC & Maryland Metro Section (509) & Northern Virginia Section (511) Software Special Interest Group (SW SIG), McLean VA, September 26.
5. (Invited) **Radziwill**, N. M., 2016: The Future of Quality: Cognitive Production, Ambient Intelligence, Smart Manufacturing, and Emergent Analytics. ASQ Boston Conference on Quality, Boston MA, April 11.
6. (Invited) Benton, M. C. & **Radziwill**, N. M., 2015: The 10 Principles in Education. IAMU Networking Executive Session, Washington DC, April 30.
7. (Invited) **Radziwill**, N. M. & Benton, M. C., 2014: The 10 Principles: A New Paradigm for Collaboration and Innovation. IAJC/ISAM International Conference, Orlando FL, September 26.
8. **Radziwill**, N. M., 2013: IT Skill Sets of the Future. Presented to the 2013 Commonwealth of Virginia's Innovative Technology Symposium (COVITS), Richmond VA, September 9. <http://www.govtech.com/events/COVITS-2013.html?page=speaker&id=220736541#myModal-214643671>
9. **Radziwill**, N. M., 2013: What is Quality Consciousness? Presented to the Blue Ridge Section (1108) of the American Society for Quality (ASQ), Harrisonburg, VA, January 16.

Workshops and Webinars Facilitated:

1. **Radziwill**, N. M., 2017: Disruptive Technologies – Artificial Intelligence, Machine Learning, and Quality. ASQ Headquarters, September 14. Distributed to 80,000 members.
2. **Radziwill**, N. M., 2017: An Introduction to Cybersecurity for Quality Professionals. Webinar, ASQ Innovation Division, May 8. 30 attendees.
3. **Radziwill**, N. M., 2016: Industrial Neurodiversity and the Future of Quality Management. Webinar, ASQ Innovation Division, November 14. 15 attendees.

42 Book Reviews published in *Quality Management Journal*

COURSES I CREATED**ISAT 331. Cyber-Physical Industry. 3 credits.**

Syndicated by Virginia Cyber Range – <http://virginiacyberrange.org>

In-depth introduction to the management of cyber-physical systems for automated production, from maker scale to global supply chains, emphasizing quality, usability, and cybersecurity in the context of an innovation ecosystem. Topics include: robotics and flexible manufacturing systems, industrial monitor and control systems (RTU, PLC, SCADA, HMI, SIS, DCS), Internet of Things

(IoT), human factors and ergonomics, virtual/augmented/mixed reality, autonomy, critical infrastructure, and smart cities. *Prerequisites: Permission of the instructor.*

ISAT 432 -- Product Design & Materials Selection for Manufacturing. 3 credits.

This course deals with the interplay between requirements specification, design, economics, environment, energy, materials selection, fabrication, manufacturing cost, and product life cycle considerations. Students complete a product design case study from requirements to final design concept, including translating requirements to design, selecting appropriate materials, and choosing between design and production concepts using qualitative and quantitative analytical methods.

ISAT 434 – Industrial Informatics. 3 credits.

Hands-on application of analytical methods selected from topics in supply chain management, forecasting, quality and process improvement, marketing research and analytics, design of experiments, and reliability assessment. The significance of technologies like cloud computing, Big Data, and Internet of Things (IoT) are emphasized throughout.

ISAT 480. Data Science and Machine Learning for Cybersecurity. 3 credits.

To be syndicated by Virginia Cyber Range – <http://virginiacyberrange.org> – January 2018

Hands-on introduction to statistics and data science for cybersecurity professionals, including data structures, data visualization, statistical inference, classification, and anomaly detection. Emphasis on risk management, fraud detection, and socio-technical interventions to enhance safety and security.

SERVICE TO PROFESSIONAL COMMUNITY

Journals

2017 – pres.	Editor, <i>Software Quality Professional (SQP)</i>
2017 – pres.	Reviewer, <i>Data Science Journal</i>
2016 - pres.	Associate Editor, <i>Quality Approaches in Education (QAE)</i>
2017 – pres.	Editorial Review Board, <i>Journal of Quality Management Systems, Applied Engineering, and Technology Management (JoQAT)</i>
2014 - 2015	Associate Editor, <i>Journal of Astronomical Telescopes, Instruments, and Systems (JATIS)</i>
2013 - pres.	Book Review Editor, <i>Quality Management Journal (QMJ)</i>
2012 - pres.	Editorial Review Board, <i>Quality Management Journal (QMJ)</i>
2012 – pres.	Editorial Review Board, <i>Journal of Technology Management and Applied Engineering (JTMAE)</i>
2011 – 2015	Editorial Review Board, <i>Quality Approaches in Higher Education (QAHE)</i>
2007 – 2016	Editorial Review Board, <i>Software Quality Professional (SQP)</i>
2009 – 2012	Editorial Review Board, <i>Journal of Industrial Technology (JIT)</i>

Standards/Body of Knowledge (BOK) Development

2013-2014	Advisor, development of ASQ Social Responsibility Body of Knowledge (BOK)
2011	Ad Hoc Reviewer, IEEE P730 Standard for Software Quality Assurance
2009	International Organization for Standardization (ISO) 26000 Standard for Social Responsibility, U.S. Technical Advisory Group (TAG), SSRO

Quality Awards Programs

- 2017 Judge, ASQ Innovation Award for United Arab Emirates (UAE)
- 2015 Judge, ASQ Performance and Recognition (PAR) Innovation Award
- 2011 Preliminary Round Judge, ASQ International Team Excellence Award (ITEA)
- 2009-2010 Examiner, Malcolm Baldrige National Quality Award (MBNQA), administered by the National Institute of Standards and Technology (NIST); appointed by the U.S. Department of Commerce
- 2008 Preliminary Round Judge, ASQ International Team Excellence Award (ITEA)

Confidential Grant Review Panels (Invited)

Since 2007, I have served on over 20 review panels for proposals and facilities ranging from \$2M to \$500M a year for the following organizations and agencies: National Science Foundation (NSF) Advanced Computing Infrastructure (ACI), NSF Office of Cyberinfrastructure (OCI), NSF Astronomy & Astrophysics (AST), Atacama Large Millimeter Array (ALMA), Fermi National Accelerator Lab (FNAL), National Ecological Observatory Network (NEON)