

Joe Manganeli, AIA, CHFP, LEED AP BD+C, PhD
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jmanganeli@jmanganeli.net
404.952.9037

Goal:

My goal is improving the capacity of the built environment to enhance human health, well-being, & performance.

Professional & research experience overview:

Over my career, my clients have included: Sanofi, Amgen, Novo Nordisk, CSL Behring, Bayer, P&G, Sysco Foods, SP Richards, McKee Foods, Interface Carpet, Kemet, Michelin, Los Alamos National Laboratories, a U.S. theme park, Champion Coach, Cornell University, Borg Warner, Electrolux, Bosch Rexroth, RealClarity, Jackson Hospital, Prisma Health, Alfred University, and many city school districts.

My collaborators have included: BCPE, IBM, NIST, NIBS, NHTSA, USGBC, HFES, CUICAR, SCMA, Prisma Health, Solvay, SAGE Automotive, and Nephron Pharmaceuticals, among others.

Recent experience at O'Neal, Inc.:

Senior Architect and Human Factors Consultant: life sciences & industrial facilities, 2020-Present

- **SP Richards**
 - leading project development and management, life safety analysis, and code analysis for retrofit of a warehouse facility to include an automated module
- **Kemet Process Expansion Code Analysis Project**
 - leading hazardous materials, life safety, and code analyses for renovation of a large portion of a semi-conductor components production facility
- **Nestle Purina Loading Dock Expansion and ASRS Module Addition Project**
 - leading building envelope specification development and miscellaneous technical design task
- **Sanofi B57 Fume Hood Replacement Project**
 - leading program development and requirements validation, code/hazard analysis, conceptual and detailed redesign of a clean room suite including ergonomics assessment, hazard analysis, and work process design adjustments to improve work process safety and ergonomics
- **SP Richards Pick Module Remodel**
 - led life safety analysis, code review, and design development for a 26,000+ sf multi-level pick module in an existing distribution center
- **McKee Foods Plant Expansion**
 - architectural visualizations of a manufacturing campus facility expansion
- **Interface Carpet Plant Employee Entrance Redesign**
 - concept refinement and technical design of a revised plant employee entrance
- **Sysco Foods Facility Distribution Facility Expansion**
 - collaborating on technical design of facility expansion

Recent experience at Fluor:

Architect IV Architectural Discipline Lead: life sciences, government, & industrial facilities, 2019-2020

- **Amgen B7 Production Facility Fit Out Alteration**
 - led team of 3-7 architects and designers on fit out of ~10,000 sf conversion to new production process
 - single use technology (SUT) batch process manufacturing suite
 - clean room environment (NC, CNC, Grade 9, Grade 8 spaces)
 - led development of new solution for passing SUT tubing through 2 hour fire barrier
 - BIM setup, coordination, and model maintenance
 - ergonomics assessment and system design of use of SUT pass through system
 - construction administration, custom details, & code analyses in support of the AOR
- **Amgen B20 Fill/Finish Fit Out Alteration**
 - led team of 4 architects and designers on fit out of ~ 10,000 sf conversion to new fill/finish processes
 - BIM setup and coordination
 - construction administration, custom details, & code analyses in support of the AOR
- **Confidential Theme Park Client**

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- led architectural code, life safety, detailing, and plan check review of another firm's design documentation for a major U.S. theme park's new attraction
- **Los Alamos National Laboratory Wastewater Treatment Facility**
 - leading architectural scope with drafting support for a new waste water treatment facility
 - BIM setup, coordination, model maintenance, custom details, & code analyses in support of the AOR

Architect III Staff Architect: life sciences & industrial facilities, 2017-2020

- **Novo Nordisk Diabetes Active Pharmaceutical Ingredient (DAPI-US) facility**
 - setting & managing the LEED strategy, scope, documentation, and team for 6 buildings + campus
 - leading the life safety code review, documentation, and compliance for all buildings (~1,000,000 sf total, ~600 spaces, and ~1,000 doors across 6 buildings)
 - door hardware and access control development & coordination with client, other disciplines, & vendors
 - Central Utilities Building + maintenance staff offices space programming and layout
 - architectural visualization for the campus master plan (renderings)
 - creation and coordination of room data sheets database and resulting spreadsheets & reports
 - construction administration for LEED scope, door hardware scope, and fire proofing scope
 - BIM setup, documentation, and custom algorithmic scripting development & operation (Dynamo)
 - coordination of monthly Material Take-Offs (MTOs) (Revit>Excel through custom Dynamo scripts)
 - ergonomics assessment/recommendations for cart operation & manual chain hoist operation
- **Los Alamos National Laboratory Office & Training Building Project**
 - develop finish matrix for 3 building office and training complex with over 1,000 rooms
 - conceptual energy analysis (Revit>SketchUp/Euclid>OpenStudio)
 - sustainable design (mapping LEED strategy to FEMP Guiding Principles compliance strategy)
- **Bayer New Laboratory and Administration Building**
 - led building envelope conceptual design
 - architectural visualizations
- **Bayer Biologic Therapies Building**
 - preliminary sustainability analysis and planning, and preliminary LEED Scorecard

Building Design Specialist III: life sciences & industrial facilities, 2014-2017

- **CSL Behring blood fractionation facility**
 - general plan/section/elevation development & detailing
- **Proctor & Gamble (P&G) consumer products facility**
 - layout & coordination of suites within a 1-2 million sf consumer products manufacturing facility
 - BIM implementation
 - architectural visualization (rendering of campus)
- **Novo Nordisk DAPI-US (see above for roles)**

AEC Researcher/Innovator: research, report/paper writing, committee leadership, 2015-2020

- **South Carolina Manufacturing Alliance (SCMA) Cognitive Computing Advisory Group (2015-2017)**
 - collaboration with SCMA, IBM, Solvay, & other members to explore application of big data, machine learning, and predictive analytics to industrial process problem solving through 2 real case studies
- **Smart Infrastructure Steering Committee (2018-2019)**
 - founder and first chair
 - led global team of about 20 contributors to assessing relationship of smart infrastructure technologies to Fluor's various business lines and client needs and challenges
 - co-lead author on the committee's smart infrastructure technical report & strategy white paper
- **Distributed Ledger Technology Steering Committee (2018-2019)**
 - member and contributor/co-author to strategy white paper
- **Innovation Catalyst (2018-2019)**
 - co-led activities on the Greenville campus to foster a culture of innovation
- **Innovation Unwrapped Participant (Fluor's internal innovation incubation program) (2018-2019)**
 - investigated application of modular construction and blockchain technologies to life sciences and advanced manufacturing challenges as part of a global team of ten researchers
 - primary researcher and author of two blog posts and a journal article on application of blockchain technologies to AEC and life sciences projects that are now being submitted for publication

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Other recent professional experience:

Part-Time Faculty: teaching user experience research and design, information architecture, content strategy, and interface accessibility standards online graduate courses, *Kent State University School of Information (2014-present)*
Postdoctoral Fellow: Research Lead & team (7) manager for the design and execution of distracted driving research and other driving-related research, *Clemson University International Center for Automotive Research (2014)*
Graduate Research Assistant: researcher on environmental, product, and systems design and research projects, and instructing undergraduate and graduate students, *Clemson University (2008-2013)*

xplr design, llc:

Human Factors Consultant: human factors consulting services, *xplr design, llc (entered operation, Sept., 2020)*

Prior Experience:

Designer 3: working on industrial facilities, *O'Neal, Incorporated (2008/2009)*

Designer 3: working on commercial & institutional facilities, *Freeman & Major, LLC (2006-2008)*

Designer 1, 2, 3: working on educational, institutional, and municipal facilities, *HUNT Engineers, Architects, Land Surveyors, P.C. (2004-2006)*

Detailer & Assistant Project Manager: contributing to the design of specialty industrial equipment, architectural metalwork, and museum-quality displays, *AccuFab, Inc. (2002-2004)*

License/accreditation:

Registered Architect in South Carolina (#9599), Georgia (#RA016066), CHFP (#2183), NCARB (#87172), LEED AP BD+C (#33505)

External leadership roles/projects:

Board of Certification in Professional Ergonomics (BCPE)

- Certified Human Factors Professional (CHFP) Exam question contributor/reviewer (2020)

National Institute of Building Sciences (NIBS)

- Thought Leadership Sub-committee member, buildingSmart alliance Council (2016-2019)
- Information Standards Sub-committee member, buildingSmart alliance Council (2016-2019)

US Green Building Council South Carolina Chapter & MLAB (2007-2017)

- volunteer program coordinator (2008)
- volunteer board member (2014-2017)
- volunteer Chapter Treasurer (2015)
- volunteer Chapter Vice-Chair (2016)
- volunteer MLAB Chair (2017)

Human Factors & Ergonomics Society (HFES) Environmental Design Technical Group

- Newsletter Editor (2018)
- paper reviewer (2012-present)

Human Factors & Ergonomics Society (HFES) Cognitive Engineering and Decision Making Technical Group

- paper reviewer (2012-present)

National Institute of Standards & Technology (NIST) Internet-of-Things-Enabled Smart City (IES-City) Framework

- [co-author of technical report outlining the Internet-of-Things-Enabled Smart City Framework](#) (2016-2018)

NIST + HFES Conference Panel on Representing the Human in Cyber-Physical Systems

- co-organizer with NIST and HFES collaborators and program chair for an extended abstract and panel discussion at the HFES Annual Meeting on representing and modeling the human as part of cyber-physical systems (e.g., smart city internet-of-things-enabled systems of systems) (2018)

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Skills:

Design:

Conceptual design through construction administration, space planning, facilities evaluations and feasibility studies, program requirements development and management, field observations and reports, coordinating technical reports, client/engineer/contractor coordination, budget estimates, code research, sketching, rendering, technical detailing, basic energy analysis, technical spec writing, product & materials research, presentation materials

Human Factors, Information Architecture & Usability Analyses:

Usability analysis, use case elicitation, requirements definition, Cognitive Work Analysis, interviewing (individual, contextual inquiry, focus groups), card sorts, task analysis, heuristic evaluations, cognitive walk-throughs, affinity diagrams, blueprinting, ethnography, surveys, wireframing, Delphi method, Kano method

Systems Analysis:

Model-based Systems Engineering (MBSE), House of Quality (HoQ), Systems Modeling Language (SysML)

Software:

Axure, AutoCAD Architecture, Bentley AECOSim, Bluebeam PDF Revu, BSD SpecLink-E, Comcheck-EZ, Dynamo, Grasshopper, Illustrator, LumenRT, Lumion, MagicDraw+SysML plugin, MODO, MS Office Suite, OpenStudio, Photoshop, Revit, Rhino, SketchUp, SpecText/Master Spec, SPSS, Vectorworks Architect, Xara

Programming Languages:

Elementary HTML, CSS, Python

Articles & Technical Reports:

Manganelli, J. (2020 forthcoming). "The Etiquette of Interacting with Our Fastidious Neighbors: Modeling Intelligent High-Performance Building Systems as a Social Organization Using an Agent-Based Modeling Paradigm."

Manganelli, J., Patterson, E., Polansky, S., Vonk, E. (2020 forthcoming). "Real-Time Commissioning, Qualification, and Validation (CQV) in Facilities Startup and Operation."

Manganelli, J., Patterson, E., Polansky, S., Vonk, E. (2020 forthcoming). "Let us Count the Ways: How Blockchain Can Enhance Facility Lifecycle Management.....and the Real-Time CQV Missing Link."

Delgado, A., Manganelli, J. (2020 forthcoming). "Smart Infrastructure's Impact on Fluor Business Lines."

Bucksey, R., Delgado, A., Manganelli, J. (2019). "Treating Blockchain-Based Smart Contracts as a Special Case of Control Systems: A Useful Perspective for Facilities Owners, Operators, Architects, Engineers, Contractors, and Suppliers." *Medium*, retrieved from: <https://medium.com/@joe.manganelli/treating-blockchain-based-smart-contracts-as-a-special-case-of-control-systems-d939b9215468>

Bhat, V., Fracsella, A., Brutti, A., Jeong, S., Burns, M., Manganelli, J., Murrillo, M., Hierro, J., Binkley, D., Verga, E.S., Zaslavsky, A. (2018). *A Consensus Framework for Smart City Architectures*. A technical report published by the National Institute of Standards and Technology, retrieved from: <https://pages.nist.gov/smartcitiesarchitecture/>.

Threatt, A., Merino, J., Brooks, J., Healy, S., Manganelli, J., Walker, I., Green, K. (2017). "The Design, Prototyping, and Formative Evaluation of an Assistive Robotic Table (ART) for Stroke Patients." in *Health Environments Research & Design Journal*, 10(3), pp. 152-169.

Manganelli, J., Smith, C. (2016). "Cultivating Perspectival Acuity: The Value and Cost of Integrating Theory, Craft, Research, and Practice." in the *Journal of Systemics, Cybernetics, and Informatics*, 14(5), pp. 52-58.

Brooks, J., Seeanner, J., Hennessey, S., Manganelli, J., Crisler, M., Rosopa, P., Jenkins, C., Anderson, M., Drouin, N., Belle, L., Truesdail, C., Tanner, S. (2017). "Interactive Tools for Measuring Visual Scanning Performance and Reaction Time." in *American Journal of Occupational Therapy*, (71), doi:10.5014/ajot.2017.020461.

Yanik, P., Threatt, A., Merino, J., Manganelli, J., Brooks, J., Green, K., Walker, I. (2016). "A Novel Approach to Lifelong Learning for Robotic Response to Gesture." in *WSEAS Transactions on Computer Research*, Vol. 4, 2016, pp.138-152.

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Manganelli, J. (2015). "Tending the Artifact Ecology: Cultivating Architectural Ecosystems." Retrieved from: <http://datastructureformdesign.com/2015/10/04/tending-the-artifact-ecology-cultivating-architectural-ecosystems/>

Healy, S., Manganelli, J., Rosopa, P., Brooks, J.O. (2015). "An Exploration of the Nightstand and Over-the-Bed Table in an Inpatient Rehabilitation Hospital." *Health Environments Research & Design Journal*, 8(2), pp. 43-55.

Manganelli, J. (2014). Reframing A/E/C/O/O Project Delivery. *Journal of the National Institute of Building Science*, 2 (6), pp. 12-15.

Manganelli, J., Threatt, A., Brooks, J. O., Healy, S., Merino, J., Yanik, P., Walker, I., Green, K. "Confirming, Classifying, and Prioritizing Needed Over-the-Bed Table Improvements Via Methodological Triangulation." *Health Environments Research & Design Journal*, 8(1), pp. 94-114.

Manganelli, J., Threatt, A., Brooks, J.O., Merino, J., Yanik, P., Healy, S., Walker, I., Green, K. (2014). "Examination of How and Why Over-the-Bed Tables Are Used: Use Cases and Needs from Healthcare Providers." *Health Environments Research & Design Journal*, 7(2), pp. 104-126.

Manganelli, J., Threatt, A., Brooks, J.O., Smolentzov, L., Mossey, M., Healy, S., Walker, I., Green, K. (2013) "Examination of Overbed Tables: Health Care Provider & User Preferences." *Health Environments Research & Design Journal*, 6(3), pp. 9-29.

Brooks, J. O., Smolentzov, L., Mossey, M., Carroll, C., Kendrick, K., Sprogis, K., Manganelli, J., Healy, S. L., Walker, I., & Green, K. (2012). "Group Differences in Preferences for a Novel Nightstand." *Health Environments Research & Design Journal*, 5 (4), pp. 88-97.

Brooks, J.O., Smolentzov, L., DeArment, A., Logan, W., Green, K., Walker, I., Honchar, J., Guirl, C., Beeco, R., Blakeney, C., Boggs, A., Carroll, C., Duckworth, K., Goller, L., Ham, S., Healy, S., Heaps, C., Hayden, C., Manganelli, J., Mayweather, L., Mixon, H., Price, K., Reis, A., Yanik, P. (2011), "Towards a 'Smart' Nightstand Prototype: An examination of nightstand table contents and preferences," *Health Environments Research & Design Journal*, 4 (2), pp. 91-108.

Conference Proceedings:

Manganelli, J. (2020). "URS Development Methods." *O'Neal Lunch + Learn Series*, July 29, 2020.

Hettinger, D., Loughran, P., Manganelli, J. (Invited Panelists) (2019). "*Panel: How The Industry is Getting Smarter About Smart Buildings.*" *Buildings 2.0 Conference, March, 2019. Chicago, IL, USA.*
<https://builtworlds.com/event/buildings19/>

Manganelli, J. (2019). "Tomorrow's Workflows Today: Augmenting BIM, Project Delivery, and Operations Workflows to Support Smart City Assets." to be presented at the *National Institute of Building Sciences Building Innovation 2019 Conference*, Washington, DC, January 7-10, 2019, retrieved from: <https://portal.nibs.org/files/wl/?id=tbJ1U8YxsL91t52NriLwWaXVo3rZjOGJ>

Burns, M., Manganelli, J., Wollman, D., Boring, R., Gilbert, S., Griffor, E., Lee, Y., Nathan-Roberts, D., Smith-Jackson, T. (2018). "Elaborating the Human Aspect of the NIST Framework for Cyber-Physical Systems." in *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, 62(1), pp. 450-454, retrieved from: <https://doi.org/10.1177/1541931218621103>

Burns, Martin J., Manganelli, Joe. (2018). "Using the IES-City Framework." Paper Presented at *4th IEEE International Conference on Smart Computing (SMARTCOMP) 2018*, Taormina, Sicily, Italy, June, 18-20, 2018.

Manganelli, J. (2018). "BIM+Blockchain in the Smart City: Concepts, Early Work, and Potential Usefulness, *National Institute of Building Sciences Building Innovation Conference 2018*, Washington, D.C., January 8-11, 2018

Manganelli, J., Mulder, J.B.F. (2017). "Thoughts on Application of Evolutionary Software Development for Complex, Large-Scale, Integrated, Open Systems." Presented at the *7th Enterprise Engineering Working Conference* and part of the *Proceedings of the EEWC Forum 2017*, Antwerp, Belgium, May 9-11, 2017. Retrieved from: <http://ceur-ws.org/Vol-1838/>

Manganelli, J., Smith, C. (2016) "Cultivating Perspectival Acuity: The Value and Cost of Integrating Theory, Craft, Research, and Practice." Paper presented at *Research and Consulting Symposium on Research and Consulting, the World Multi-Conference on Systemics, Cybernetics, and Informatics*. July 5-8, 2016, Orlando, FL.

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Frankel, M., Edelson, J. (2015). *Getting to Outcome-Based Building Performance: Report from a Seattle Summit on Performance Outcomes*. (I was a participant in this summit who contributed ideas that ended up in the report, and I am listed as a summit participant and contributor in the report.) retrieved from: <https://newbuildings.org/performance-outcomes-event-report>

Manganelli, J., Brooks, J.O. (2015). "Comparing Two Model-Based, Human-Centered Complex, Interactive Systems Modeling Methods: Lessons Learned." Presentation at the *Institute for Industrial Engineers Annual Conference*, May 30th, 2015, Nashville, TN. Retrieved from: <https://www.xcdsystem.com/iie2015/proceedings/index.cfm?pgid=34&search=1&qtype=Session&sid=10926&submit=Go>

Kapadia, A. Walker, I.D., Green, K.E., Manganelli, J.C., Houayek, H., James, A., Kanuri, V.K.T., Mokhtar, T., Siles, I., and Yanik, P. (2010) "Architectural Robotics: an Interdisciplinary Course Rethinking the Machines We Live In". In the *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Anchorage, Alaska, USA, May 2010, pp. 48-53.

Conferences with Published Abstract:

Manganelli, J. (2018). "Agents' Cognition in the Smart City: Agent Architecture Assessment Framework." Poster with extended abstract at the *Academy of Neuroscience for Architecture Conference 2018*, La Jolla, CA. Sept. 19-21, 2018. Retrieved from: <http://anfarch.org/wp-content/uploads/2019/02/2018-ANFA-Posters-Booklet.pdf>, p. 53

Manganelli, J. (2018). "Standards, Risks, Cybersecurity, Blockchain, and the Building Industry: CEaVa and NIST Frameworks." presented at *AECNext Conference 2018*, Anaheim, CA, June 5, 2018.

Manganelli, J. (2016). "Designing for Complex, Interactive Architectural Ecosystems: Developing the Ecological Niche Construction Design Checklist." Poster at the *Academy of Neuroscience for Architecture Conference 2016*, La Jolla, CA. Sept. 22-24, 2016.

Manganelli, J., Farr, R., Brooks, J., Gugerty, L. (2016). "Wayfinding in a Large, Complex Environment." Poster at *Academy of Neuroscience for Architecture Conference 2016*, La Jolla, CA. Sept. 22-24, 2016. Retrieved from: <https://www.brikbases.org/content/effect-experience-wayfinding-large-complex-environment>

Gerontological Society of America (2013): Poster presenter on behalf of the labs at Greenville Hospital System and the Clemson University International Center for Automotive Research

Manganelli, J., Green, K., Brooks, J., Mocko, G., Walker, I., Healy, S., Kopera, K., Threatt, A., Merino, J., Yanik, P. (2012). "Patterns in Architecture, Cognition, Systems, and Software: Representing and Analyzing Cognition during the Design Process." Poster at *Academy of Neuroscience for Architecture Conference 2012*, La Jolla, CA. Sept. 20-22, 2012. Retrieved from: <http://www.anfarch.org/documents/ManganelliPoster.pdf>

Workshops and Other Presentations:

User Requirements Specifications (URS) Development Methods (2020): A presentation given online on behalf of O'Neal, Inc., <https://vimeo.com/443026267>

eCAADe, TU Delft, Netherlands (2013): Co-organizer of (and presenter at) the *Hands-on with Custom Digital Workflows* workshop at the conference

Education:

Clemson University – Clemson, South Carolina

Doctor of Philosophy, Planning Design & the Built Environment (PDBE) Program (December, 2013)

Master of Science, Applied Psychology, Human Factors Focus (May, 2016)

Auburn University – Auburn, Alabama

Bachelor of Architecture (May, 2002) - Cum Laude, Honors Scholar, Tau Sigma Delta, Golden Key

Bachelor of Liberal Arts (May, 2002) - Spanish - Cum Laude, Honors Scholar, Sigma Delta Pi