

PROFILE

Resilience scholar researching the influence of human factors on socio-technical systems; senior executive with over 25 years of professional experience that includes a record of achievement in wireless communications, software, semiconductors, defense radar, and consumer electronics industries. Domestic and international leadership in business development, operations, general management (P&L responsibility) and global program / product management in both startup and growth organizations; proven ability to build and retain high-caliber cross-functional teams, strategic partnerships, and distribution networks. Demonstrated ability to lead organizational change and manage complex business relationships. Committed to excellence in communication, integrity, and sustainability. Managed budgets of \$40M. USA Citizen. PhD, MBA, MSEE, BSEE.

- Executive leadership
- Resilient infrastructure
- Partnerships & alliances
- Research & development
- Sustainable engineering
- International programs

SELECTED ACCOMPLISHMENTS

- Directed broadband wireless development with 4 program managers supporting 60+ hardware and software engineers and 10+ marketing and business development professionals with 20% growth plans.
- Developed strategic business plans for entering the mobile handset and portable applications markets; presented plans to over 20 venture capital firms resulting in \$10M investment.
- Negotiated, closed, and managed product development and purchase agreement with Asian partner valued at \$60M for integrated circuits in CDMA mobile handsets compliant with the FCC E-911 mandate.
- Secured a software development and product purchase agreement valued at \$12M; drove software requirements process and product roadmap with geographically displaced and culturally diverse teams.
- Designed curriculum and led a 3 unit graduate course in resilient infrastructure exploring diverse concepts, methods, and policies involving practical applications including power, water, and transportation systems.
- Produced three research articles examining the socio-technical dimensions of critical infrastructure resilience and present a model for integrating human resilience & development with technological concepts.

EDUCATION

PhD, Civil, Environmental, and Sustainable Engineering May - 2017
School of Sustainable Engineering and the Built Environment, Tau Beta Pi Honors
Arizona State University, Tempe, AZ

Dissertation: Human resilience and development in coupled socio-technical systems: A holistic approach to critical infrastructure.

Master of Business Administration 2000
Santa Clara University; Santa Clara, CA; Beta Gamma Sigma Honors

Master of Science, Electrical Engineering 1986
Georgia Institute of Technology; Atlanta, GA

Bachelor of Science, Electrical Engineering 1983
University of California; Santa Barbara, CA

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PROFESSIONAL EXPERIENCE

RESILIENCE ENGINEERING INSTITUTE, Tempe, AZ, *Founder, Executive Director* 11/17 – present
Founded an independent research organization to promote a common understanding of core concepts and principles of resilience applied to the design, operation, and management of complex socio-technical systems.

- Developed online resources for the dissemination of resilience engineering knowledge aimed at experts in academia, industry, and the general public with a focus on critical infrastructure systems.
- Produced a research proposal to investigate the resilience of the electric power grid with embedded blockchain technology.

ARIZONA STATE UNIVERSITY, Tempe, AZ 8/14 – 8/17
School of Sustainable Engineering and the Built Environment
-Postdoctoral researcher (5/17 – 8/17)
-Research associate (8/14 – 5/17)

Conduct research of critical infrastructure resilience under a grant funded by the National Science Foundation as part of a larger project involving students and professors from multiple disciplines.

- Researched a holistic approach to resilience knowledge integrating diverse perspectives and methods.
- Conceptualized an ontological framework of critical infrastructure integrating the resilience and development of human systems coupled with technological systems.
- Produced three lead-author research manuscripts targeted for peer-review journal publication.
- Synthesized socio-technical resilience concepts in paper presentations at six conferences.
- Facilitated ‘resilient infrastructure’ graduate engineering special topics course, 3 semester units.

VISUAL BUSINESS CONSULTING, Boulder, CO, *Principal* 3/09 – 4/13
Independent consultant providing business and IT development services.

- Developed strategic marketing, business planning, and operations management tools.
- Designed a financial modeling tool for assessing energy-efficient upgrades of residential properties.
- Created an online learning center aggregating access to a wide assortment of personal development courses, e-learning tools, and digital content management resources.
- Launched a commercial website hosting platform with a full suite of integrated products and services including auto-provisioning, billing, and support knowledgebase.

HOME VENTURES, LLC, Boulder, CO, *Owner, Investor* 3/06 – 3/09
Founded real estate investment firm specializing in single-family residential properties located in Denver Metro.

- Managed the purchase, renovation, and rental of 5 properties valued at \$750,000 during the first year.
- Negotiated partnership and subsequently completed over 40 real estate transactions during an 18 month period starting in mid 2007 generating over \$3M in revenues.
- Directed 27 property renovations during the partnership including hiring contractors, obtaining permits, and managing projects from start to finish.

OAK GLOBAL BROADBAND, Paris, France 3/04 – 9/05
Start-up broadband wireless consulting firm offering market development and engineering services to private, corporate, institutional and government network operators and service providers.

Consulting VP of Business Development; Tampere, Finland
Engaged by the CEO to assist company in start-up phase.

Responsible for technical marketing and business development supporting 6 key accounts. Charter to develop a broadband wireless network with strategic vision to build, operate and own core network assets.

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- Delivered technical sales support for key account prospects in Europe, Asia, and South America.
- Performed market research on broadband data and developed product roadmap for user terminals.
- Developed strategic market-entry and business plans staging growth through partnerships and acquisitions.

U-NAV MICROELECTRONICS, Corp., Irvine, California; Tampere Finland 7/01 – 6/03
Start-up fabless semiconductor firm developing global positioning satellite integrated circuits and software.

Managing Director, R&D Center, Tampere, Finland (7/02 – 6/03)
Selected by the CEO to lead operations of the Company's European subsidiary while also serving as VP of Business Development. Relocated to Tampere as an expatriate.

Responsible for day-to-day operations including engineering, product/program management and administration with fiduciary responsibility finance, accounting, contract, legal and general corporate issues. Operating expense budget of \$1.5M in 2002 and \$1M in 2003. Staff: 4 direct reports and 18 indirect.

- Directed day-to-day operations including engineering, product/program management and administration in addition to fiduciary responsibility finance, accounting, contract, legal and general corporate issues.
- Expense budget for 2002 came in at \$1.2M, \$300k (20%) under target of \$1.5M; 2003 was \$850k, \$150k (15%) under target of \$1M. Budget reductions due to operational restructuring.
- Drove key account prospects with Asian and European mobile handset suppliers.
- Negotiated, closed and managed software development and chipset purchase agreement valued at \$18M with Australian firm for A-GPS firmware in support of mobile handset market.
- Negotiated and managed new partnership initiative with mobile handset manufacturer for technical evaluation of integrated circuits and software for Assisted-GPS technology.

Vice President, Business Development, Irvine, California (7/01 – 6/03)
Recruited by CEO to develop and implement market and business development plans and partnership strategies directed at wireless mobile handset and portable applications market segments.

Responsible for establishing a beachhead in the mobile handset market: signed an agreement within the first 6 months and a second 10 months later. In the absence of commercial product, revenues were limited and derived from engineering services, chipset samples, and development expenses.

- Developed and implemented strategic business plans for penetrating the mobile handset and portable applications markets and presented plans to over 20 VC firms resulting in \$10M investment.
- Secured sale to European handset supplier in the telematics, safety and security market space valued at \$4M.
- Negotiated and closed a software development and product purchase agreement valued at \$12M. Drove software requirements process and product roadmap to fulfill agreement while maintaining close working relationships with senior executives and engineering managers.
- Negotiated, closed, and managed product development partnership and purchase agreement with Asian manufacturer valued at \$60M for integrated circuits for a new line of CDMA mobile handsets compliant with the FCC E-911 mandate.

ARRAYCOMM CORPORATION, San Jose California 9/97 – 5/01
Wireless communications firm specializing in smart antenna network technology and software.

Director of Operations, Internet Products Group (9/99 – 5/01)
Promoted by General Manager to lead operations and programs for Wireless Internet Products Group.

Operating expense budget \$40M with financial management responsibility for the Wireless Internet Products Group of 85+. Responsible for day-to-day operations of 2 key partnership programs and 1 product development program with 4 direct reports and 70+ indirect/dotted line program reports.

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- Managed operating budgets of \$37.2M, \$2.8M (7%) under target of \$40M for marketing, business development, engineering, and administration while implementing extensive cost control measures resulting in more effective financial tracking, and lower operating costs while meeting critical program objectives.
- Directed broadband product development program involving 4 program managers, 60+ hardware and software engineers, and 10+ marketing and business development professionals with 20% growth plans.
- Led technology licensing partnership program with Asian partner requiring regular interaction with, and reporting to, both company and partner senior management. Combined value of programs under my direction \$80M+.
- Managed key partnership program with Asian partner aimed at test, evaluation and trial deployment of a broadband data network in the greater San Diego area resulting in a \$7M investment.

Director of Program Management, IntelliCell Products Group (12/98 – 8/99)

Promoted by VP of Marketing to fill a new position as a direct result of my on-going success managing a key strategic partnership program representing the company's sole source of revenue.

Responsible for strategic and tactical leadership in the execution of 2 key programs with a Japanese partner and several smaller internal projects. Performed program financial management and cost analysis with responsibility for tracking \$20M program expense budget. One direct report with 55+ indirect/dotted line program reports.

- Established program management tools, processes and procedures for development, partner and field trial programs by aligning cross-functional teams with common program objectives.
- Directed technology transfer and joint development for Wireless Local Loop (WLL) program involving 55+ company engineers driving product design and 25+ partner engineers.
- Managed technology licensing program for PHS mobile network deployments in Japan and China yielding licensing revenues of \$2M.
- Managed simultaneous WLL field trials in seven foreign countries in Asia, Africa, and South America.

Senior Program Manager, Fixed Wireless Access (9/97 – 11/98)

Recruited by Director of Product Management to join the Fixed Wireless Access group engaged in the software intensive design and development of WLL network architecture, and hardware manufacturing.

Responsibilities included product and program management support. Faced a start-up working culture with no established operating guidelines, processes or procedures.

- Led transition away from equipment manufacturing and network integration resulting in renewed focus on software development and core business objectives resulting in operational savings of \$4M.
- Engineered complete turn-around of key strategic partnership, from senior executive to worker level, leading to increased productivity, improved partner relations and \$10M contract fulfillment revenue.
- Directed contract fulfillment and enforcement of technology licensing and joint product development programs yielding \$20M combined revenues to the company for meeting contract milestones.

GRAFIX CYBERWEAR CORPORATION, Santa Cruz, California 4/89 – 6/97
Consumer electronic products for upscale gift and accessory markets and corporate promotions

President & CEO

Co-founded company to create a line of innovative wearable technology products

Responsible for launching and growing start-up company with limited personal funds. Performed business planning, market development, financial management and cost analysis. Contracted mass manufacturing operations in Hong Kong and China while maintaining a small domestic workforce. Secured 2 licensing deals and 3 corporate program deals collectively valued at \$350k.

- Co-founded company in 1989 and launched over 20 product designs in the 8 years.

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- Created custom LCD products for Paramount Communications for use on the television shows Star Trek – The Next Generation, Star Trek Deep Space Nine, Star Trek Voyager, and the feature film Star Trek – First Contact. Launched new product designs for Star Trek licensed merchandise yielding \$75k in revenue.
- Designed, developed and contract manufactured 75,000 custom watches for a mass retailer and 42,000 custom LCD accessories for a gaming company. Mass market sales were over \$1.2M between 1994 – 1996.
- Created custom products for The Coca-Cola Company, McDonald’s Corp., PepsiCo and The Walt Disney Company yielding revenues of \$165k.
- Negotiated and closed license agreements with The Coca-Cola Company, The Walt Disney Company, Paramount Communications and Saban Entertainment (Power Rangers). Combined license revenue \$150k.
- Directed a domestic work force between 6-12 people, managed production at 4 Asian factories and procured parts and components from 12+ Asian and European suppliers.

ARGOSYSTEMS, INC. Sunnyvale, California

8/87 – 3/89

Electronic defense and aerospace subsidiary of Boeing.

Senior RF Systems Engineer and Program Manager

Recruited by department manager to perform antenna research and design for airborne radio location systems.

Responsible for technical management of international airborne research and development programs. Led project for computer modeling of precision microwave direction finding (DF) systems operating from 0.5-18 GHz. Performed antenna system analysis, design, specification, and test in antenna chambers.

- Developed a numerical model for resolving ambiguities in phase interferometer DF measurements using amplitude data resulting in improved accuracy and lower cost of implementation.
- Performed design, analysis and performance characterization of hybrid phase/amplitude DF system installed on reconnaissance aircraft yielding significant increase accuracy and reliability.
- Conducted analytical and experimental studies of amplitude DF error due to electromagnetic scattering in an airborne environment that led to major improvements in system performance.

LITTON APPLIED TECHNOLOGY, Sunnyvale, California

7/83 – 7/87

Electronic defense and aerospace industry firm specializing in radar warning receiver technology.

Senior RF Systems Engineer (Earned MSEE while on 1 year sabbatical 9/85-9/86)

Recruited out of university to join sustaining engineering; assigned to advanced systems after 3 months.

Responsible for RF system/subsystem requirements definition, research, and analysis. Performed design and computer simulation of RF system architecture and performance tradeoff studies.

- Installed and tested advanced mobile radar data collection system.
- Designed, developed, built and tested 2-18 GHz dual channel phase tracking microwave receiver.
- Researched precision microwave DF systems using phase interferometers and tested components.

GEORGIA TECH RESEARCH INTSITUTE, Atlanta, Georgia

9/85 – 9/86

Electromagnetic Effectiveness Division

Graduate Research Assistant

- Researched radio surface wave propagation on multi-layer dielectric structures.
- Performed measurement and data analysis of the dielectric properties of space shuttle tile materials.
- Investigated electromagnetic scattering and interference of space vehicles re-entering the earth’s atmosphere.

NASA AMES RESEARCH CENTER, Moffett Field, Mt. View, California

6/79 – 5/80

Astrophysics Branch of the Space Science Division

Undergraduate Research Assistant

John E. Thomas - CV

- Assisted NASA scientist with experimental research in molecular spectroscopy.
- Performed testing of components and instruments supporting the Galileo mission to Jupiter.
- Supported analysis of data returned from Viking II mission to Mars.

PUBLICATIONS

Thomas, J.E., Eisenberg, D.A., Seager, T.P., (2018). "Holistic Infrastructure Resilience Research Requires Multiple Perspectives, Not Just Multiple Disciplines," in *Infrastructures*, 3(30), 30.

Thomas, J.E., Eisenberg, D.A., Seager, T.P., Fisher, E., (2017) 'A resilience engineering approach to integrating human and sociotechnical system capacities and processes for national infrastructure resilience' *Journal of Homeland Security and Emergency Management*. –*In Review*

Eisenberg, D.A., Seager, T.P., Hinrichs, M.M., Kim, Y., Wender, B.A., Markolf, S., **Thomas, J.E.**, Chester, M.V., Alderson, D.L., Park, J., Lai, Y-C., Linkov, I., Spierre Clark, S., Woods, D.D., "Robustness and Extensibility in Infrastructure Systems," *Sustainable and Resilient Infrastructure*. –*In Review*

Thomas, J.E., Cloutier, S., Seager, T.P., 'An Ontological Framework Integrating Psychological Human Development and Technological Resilience in Socio-technical Systems' –*preparing for submission*

BOOK CHAPTERS

Seager, T.P., Spierre Clark, S., Eisenberg, D.A., **Thomas, J.E.**, Hinrichs, M.M., Kofron, R., Norgaard Jensen, C., McBurnett, L.R., Snell, M., Alderson D.L., (2017) "Redesigning Resilient Infrastructure Research," in: *Resilience and Risk: Methods and Application in Environment, Cyber and Social Domains*, Linkov, I., Palma Olivera, J. (eds.), Ch. 3, Springer

Snell, M.L., Eisenberg, D.A., Seager, T.P., Clark, S.S., Oh, Y.J., **Thomas, J.E.**, McBurnett, L.R., (2016) "A multidimensional review of resilience: Resources, processes, and outcomes," in: *The International Risk Governance Council Resource Guide on Resilience*, IRGC, online: <https://www.irgc.org/wp-content/uploads/2016/04/Seager-et-al.-A-Multidimensional-Review-of-Resilience.pdf>

TEACHING

Resilient Infrastructure: Graduate special topics class, 3 semester credits spring semester 2016
Arizona State University, Tempe, AZ

Created a syllabus and led class discussions exploring resilience concepts, methods, and policies with practical applications to critical infrastructure. Offered to graduate masters and PhD civil engineering students.

Invited Lecture: Introduction to resilience. Civil engineering class (90 minutes) 1 April 2016
Chandler-Gilbert Community College, Chandler, AZ

Invited Lecture: Introduction to infrastructure resilience. Civil engineering class (90 minutes) 3 April 2017
Chandler-Gilbert Community College, Chandler, AZ

Invited Lecture: Resilient Sociotechnical Systems. Graduate environmental studies class (2 hours) 30 Oct. 2017
University of Colorado, Boulder, CO

CONFERENCE PRESENTATIONS

International Symposium on Sustainable Systems and Technology 2016, Phoenix, AZ 16-18 May 2016
Paper Presentation: *A Resilience Framework of Coupled Social, Ecological, and Technological Systems*

The Infrastructure Security Partnership 2016 3-5 April 2016
Paper Presentation: *A Holistic Approach to Critical Infrastructure: Human Resilience and Development In Coupled Social, Ecological, and Technological Systems*

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- Pathways to Resilience III**, Halifax, Canada 16-19 June 2015
Paper Presentation: *A Model of Human Resilience in Science and Engineering Environments*
- International Symposium on Sustainable Systems and Technology 2015**, Dearborn MI 18-20 May 2015
Paper Presentation: *An Integral Approach to Organizing, Indexing, and Linking Resilience Knowledge*
Discussion Panel Participant: *Resilience Perspectives*
- The Infrastructure Security Partnership 2015** 20-21 April 2015
Paper Presentation: *A Human Resilience Model for the Design and Operation of Engineered Systems*
- Integrated Network for Social Sustainability 2015 (INSS)** 9-10 April 2015
Paper Presentation: *A Model of Human Resilience for Technological Systems*
Discussion Panel Participant: Resilience in Social, Technical, and Ecological Systems

TRAINING WORKSHOPS

- Leadership Maturity Coaching Intensive** 15-19 Sept. 2015
Received 40 hours of training to incorporate the LMF and MAP tools in coaching tailored to individual stages. Practiced applying the principles to different coaching case studies in one-on-one and small group sessions.
- Leadership Maturity Framework and MAP Intensive** 10-13 June 2015
Received 32 hours of training in theory and practical application of the Leadership Maturity Framework and Maturity Assessment for Professionals for identifying how developmental stages appear in human subjects.
- Matrix Leadership Communications** January – June 2014
Received 136 hours of training in Matrix Leadership principles, skills, and methods applied to individuals and small groups. Practiced advanced interpersonal communications for enhancing social coherence in community and working groups and enabling emergent leadership.

SERVICE

- Integrated Network for Social Sustainability 2015 (INSS)** 9-10 April 2015
Student Volunteer, a virtual conference of webcasts and interactive communications
- Member of planning committee representing Arizona State University
 - Facilitated student and faculty presentations involving live webcast among five universities.
- Boulder Integral**, Boulder, Colorado 2009 - 2010
Executive Director, non-profit 501 (c) (3) corporation offering advanced communications training
- Led community engagement, business planning, development, and operations.
 - Adapted new business model incorporating memberships, products, and services.
 - Elicited new strategic direction producing business incubator workshops integrating personal development.