

William L. Chapin

Innovative technologist and project leader with consistent success
meeting human interaction and design challenges in a fast-paced environment

Profile

- Technology development manager leading prototype and design integration projects.
- Visionary and creative design team leader with proven problem-solving skills.
- Rapid prototype designer able to bridge diverse technologies for an optimal solution.
- Proactive planner who advances and achieves organizational goals.
- Technical expert in 3D and immersive interfaces, real-time sensor-display systems, human perception, technology hybridization and software/hardware product design.
- R&D and product life-cycle manager who partners with research scientists, engineers, operations, and marketing strategists.
- Business developer comfortable partnering with and supporting closers for major sales.

Competencies

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| • Innovation and futuristic thinking | • Product design, NPD, NPI, MRD, PRD, PLM |
| • Leadership, planning and organization | • DFM, cost estimation, supply chain |
| • Program and design team management | • Automated systems, robotic mechanisms |
| • Design, prototyping, and product realization | • Integrated sensing and actuation |
| • Creative problem solving and innovation | • 3D graphics, 3D audio, RT closed-loop |
| • Systems engineering management | • Agile, C/C++, MATLAB/CMEX, LISP, Fortran |
| • Coaching, mentoring, teamwork | • APIs – Win32/64, GUI, OpenGL, MFC |
| • Customer focus, tech sales closer | • AutoCAD, MATLAB, Arduino, Rexroth |
| • Interpersonal skills | • PC, UNIX, embedded real-time platforms |

Experience

Auris Health, Redwood Shores, CA (part of Johnson & Johnson MedTech) **March 2020 to Present**

Sr. Mgr Sensor Systems, Flexible Surgical Robotics, Medical Device

- Created a “center of knowledge” navigation tracking laboratory to create a cross-functional resource. Staffed, trained, and mentored four team members.
- Devised and developed automated navigation tracking test equipment (fully-robotic) and data analysis through the sensor systems team.
- Surveyed and analyzed competitive and new technologies to ensure the Monarch platform utilized the best possible technology.

Senior Principal R&D Engineer, SME Real-time Position Tracking, Surgical Robotics, Medical Device

- As a member of the Vision & Sensors R&D team, worked cross-functionally between instruments R&D, capital hardware R&D, software R&D, systems engineering, clinical engineering, supply chain, manufacturing and global strategic marketing to fully understand the challenges in need and short-comings in existing implementations, and devise a strategy to solution.
- Through vendor process management, component design, sensor integration process improvements, competitive bidding, and vendor negotiation, reduced the per instrument assembled cost of sensors from \$280 to \$72 (\$208 savings x 20,000 per year production), and increased full device yield by 8%. Design change FDA approved through 2023 510K.
- Initiated multiple projects to better improve testing effectiveness, navigation performance, and customer satisfaction.

Vytronus Inc, Sunnyvale, CA

April 2019 to March 2020

Expert Consultant, SME Real-time Position Tracking, Surgical Robotics, Medical Device

- Worked closely between navigation and catheter design teams to solve complexities in tracking and guiding a robotic catheter for delivering accurate cardiac ablation therapy.
- Managed electro-magnetic sensing laboratory, extended automated test procedures for sensor and sensor environment characterization.
- Initiated application-driven EM technology research to inform sensor design and data computation.
- Vytronus was acquired by Johnson & Johnson, and merged with the Auris Health company.

AuSIM Consulting, Mountain View, CA

January 2012 to April 2019

Team Lead, Automated Electro-Mechanical Systems

- Developed sensors and sensor-actuator integration for an automatic water treatment product.
- Designed and built automated robotic solutions for unique advanced audio technology problems, including real-time room acoustics tuning; psycho-acoustics localization; and high-volume, precision acoustical measurement.
- Assembled a complementary team of world-class partners to bring knowledge and expertise to the problems and facilitate bridging parallel operations to the solutions.
- Developed AuSIM's HeadZap-M automated head-related transfer function measurement system capable of measuring over 800 positions per hour.
- Developed numerically driven mechanized aural measurement and localization system that silently positions a loudspeaker to any position on a four-meter sphere in less than three seconds.
- Implemented firmware, middleware, API and user-interface software.
- Integrated audio signal processing technology, large mechanisms, high-torque servo motors, dozens of sensors, human factors, ergonomics, safety certification, performance tuning, monitoring, control, user interface, wear/reliability prediction, training and maintenance.
- Led design effort for all disciplines: electronic, mechanical, control, sensor planning and software, ensuring inter-operability and performance.

AuSIM Consulting, Palo Alto, CA

September 2006 to December 2011

Engineering Team Lead, Auditory Displays

- Invented and developed AuSIM3D® Vectasonic™ loudspeaker array 3D sound display system technology.
- Led teams (contracted partners) in the design and implementation of multimillion-dollar auditory facilities (Army Research Lab, NASA Langley Research Center and Missouri Science & Technology).
- Led technology architects (acoustics, signal processing, control, mechanical) and architectural integration engineers (architects and construction engineers) to understand the integration.
- Designed signal routing and control system.
- Specified and purchased all digital equipment.

AuSIM, Inc., Mountain View and Scotts Valley, CA

July 1998 to August 2006

Founder and President/Technologist/Program Leader

- Develop integrated, innovative solutions for perceptual research laboratories.
- Served in a variety of capacities in the life of this small business, including engineering program manager for a staff of 23+ engineers and contractors, technology visionary, sales and business development leader, market strategist, proposal writer and finance manager.
- Productized 3D audio technology for mission-critical application markets, including air-traffic controllers, firefighters, pilots and vehicle operators.
- Developed AuSIM3D® Fixed-Filtering algorithm, dynamically mixing the outputs of a finite set of efficient, constant filters to significantly increase the computational performance compared to the traditional dynamic filter approach for large environments.

- Developed AuSIM3D® 3D audio simulation technology (encapsulated into the Gold Series and 3DVx hardware and various software products) and delivered advanced aural display systems to the U. S. Navy, U. S. Army, U. S. Air Force, NASA and industrial customers.
- Managed and developed engineering staff from interns to advanced principal engineers.
- Sold AuSIM's core technology, AuSIM3D, to Sennheiser GmbH & Co. for mass-market development.

Sterling Software, Moffett Field, CA

November 1997 to June 1998

Senior Research Engineer

- Designed an experiment with psycho-perception scientists at NASA Ames Research Center from then separate aural and visual laboratories, now "Advanced Displays and Spatial Perception Lab".
- Integrated immersive display systems for the respective sensory modes.
- Time-synchronized the stimuli to be a verifiable replication of the physical sensory presentation.
- Implemented the 3D interaction experiment code for both VR (occluded) and AR (non-occluded).

Aureal Semiconductor, Inc., Fremont, CA

May 1996 to September 1997

Director, Advanced Technology

- Led a small team of scientists in the development of signal processing tools and advanced algorithms for 3D audio simulation.
- Drove the patent design and implementation of algorithms for efficient computation of wave propagation through reflective and occlusive acoustic environments.
- Principally developed 3D audio by reducing 3D models to signal processing parameters.
- Synchronized audio and visual display modalities for immersive perceptual research.
- Developed the core acoustic simulation reflection technology deployed in Aureal Semiconductor's A3D 3.0 called Wave Tracing.

TeleSense Partners, Palo Alto, CA

June 1995 to April 1996

Founder/President

- Commercialized part of Stanford PhD thesis project "DesignSpace" into an immersive, virtual audio teleconferencing system.
- Delivered first system to NYNEX Science & Technology in Westchester, NY
- Merged with MediaVision along with Crystal River Engineering to become Aureal Semiconductor.

Giugi Design, Springfield, IL and Palo Alto, CA

August 1986 to May 1995

Engineering/Technical Design Consultant

- Provided product design, manufacturing analysis, computer-based engineering tool specification, software engineering, customization and installation and 3D modeling.
- Delivered virtual simulation development engineering to a variety of clients, including:
 - Crystal River Engineering, synthetic 3D audio technology developers, Groveland, CA
 - Virtual Technologies, human body instrumentation manufacturers, Palo Alto, CA
 - Fakespace Labs, interactive simulation display manufacturers, Menlo Park, CA
 - Division Ltd, interactive simulation system developers, Bristol, England
 - LEEP Systems, head-coupled display lens manufacturers, Boston, MA
 - Greene & Bradford, civil engineer, Springfield, IL

Telepresence Research, Palo Alto, CA

June 1991 to December 1991

Staff Engineer

- First technical hire for Scott Fisher and Brenda Laurel's virtual reality venture.
- Built immersive simulation systems, including multi-person, employing Division Ltd's dView and ProVision real-time 3D graphics.
- Integrated advanced user interface devices from Virtual Technologies, Fakespace Labs, Crystal River Engineering, Virtual Research, LEEP, Logitech, Reflection Technologies, and many others.

Northfield Solar Builders, Northfield, MN

June 1983 to August 1986

Vice President, Partner

- Served as corporate vice president, director of design and general contractor specializing in high-quality/ultra-low-energy custom residential and light-commercial design and construction.
- Designed a revolutionary construction technique for super-insulating existing residential and light-commercial structures. Published in 1985 in *Progressive Builder* magazine.

Education

- PhD Candidate, Center for Design Research, Stanford University, Stanford, CA, 1990 to 1996
- MS, Mechanical Engineering, Stanford University, Stanford, CA, 1993
- BS, General Engineering, University of Illinois, Urbana-Champaign, IL, 1989
- BA, Math/Computer Science, Carleton College, Northfield, MN, 1983

Professional and Personal Development

- Certified, Product Realization, Product Realization Group, 2013
- Member, Gamma Epsilon General Engineering Honorary Society, 1989
- Assistant basketball coach, UIUC Fighting Illini (1987-1989) to the NCAA Final Four, 1989
- Letter winner, five varsity seasons in two intercollegiate sports, 1980-1983
- Certificate, Swiss German Cultural Immersion Program, School for International Training, 1978
- Graduate Leader, National Outdoor Leadership School, Lander, WY, 1977
- Project Portfolio: <http://ausim3d.com/wlc/projects.html>