LAIRD REESE SNOWDEN

Executive Leader | Manufacturing Transformation | Technology Strategy | Engineering Operations

Austin, Texas | Albuquerque, NM | Open to Relocation

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Gemynd Institute

EXECUTIVE PROFILE

Executive leader with a record of transforming complex manufacturing, semiconductor, photonics, aerospace, and defense organizations into scalable, profitable enterprises.

AT&T Microelectronics / Bell Labs: Business transformation

Led the operational and manufacturing transformation of the Long Lines Fiber Optic Chipset business. Through yield improvement, process control, test optimization, manufacturing analytics, and organizational alignment, Led transformation of the business from a money-losing operation into the most profitable Strategic Business Unit within AT&T Microelectronics, generating approximately **$250 million annual net profit on $500 million annual sales**, while supporting a market experiencing **year-over-year volume doubling**.

- Identified systemic manufacturing and yield limitations that had resisted conventional process-engineering approaches.
- Independently developed manufacturing analytics methodologies integrating relational database technologies, statistical process analysis, device physics, and production data.
- Designed and implemented yield-learning systems that enabled rapid identification and correction of dominant loss mechanisms.
- Modified and extended production test and wafer-probe infrastructure to capture previously unavailable manufacturing intelligence.
- Built cross-functional alignment among manufacturing, process engineering, test engineering, software, and device engineering organizations.
- Established data-driven decision methodologies that accelerated yield improvement, profitability, and manufacturing scalability.

- Created operational frameworks that supported sustained production growth during periods of year-over-year volume doubling.

Built and transformed high-technology manufacturing organizations operating in rapidly expanding markets, including helping lead a Bell Labs business from losses to $250M annual net profit on $500M sales while production volumes doubled year-over-year.

Technical transformation:

Developed new Opto/Electric technology in prototype military Directed Energy Weapons.

Worked with Vendors to direct the development of new COTS technology.

Designed and built a fiber attach lights out automated fiber attach to laser and transimpedance waveguide machine, completed in one month.

SELECTED ACHIEVEMENTS

• 98% yield on first production lot of advanced III-V semiconductor fabrication facility.
• $250M annual profit improvement through AI-based manufacturing optimization.
• Nanometer-level automated optical alignment system.
• SONET test reduction from 30 minutes to 8 seconds.
• Advanced Directed Energy Weapon tracking and control systems.
• Large-scale electro-optical stabilization architectures.
• AI-driven yield optimization systems.
• Semiconductor process control innovations.
• High-reliability aerospace and defense system development.

Career highlights include:

- Transformed an AT&T Microelectronics business from losses to approximately **$250M annual net profit on $500M annual revenue**
- Supported operations during a period of **year-over-year volume doubling**
- Led startup of a **$4B semiconductor fabrication facility** after previous deployment efforts had failed
- Achieved **92–98% first-lot wafer yields** during fabrication facility deployment
- Directed development of advanced photonics, semiconductor, aerospace, and directed-energy technologies

- Built laboratories, organizations, manufacturing systems, and engineering teams supporting long-term growth and innovation
- Led programs ranging from concept development through production deployment and field support

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EXECUTIVE STRENGTHS

Business Leadership

P&L Impact

Operational Excellence

Manufacturing Scale-Up

Growth Strategy

Technology Commercialization

Strategic Planning

Organizational Development

Change Management

Engineering & Operations Leadership

Engineering Management

Systems Engineering

Product Development

New Product Introduction

Manufacturing Operations

Process Optimization

Quality Systems

Reliability Engineering

Supply Chain Collaboration

Vendor Management

Cross Functional Leadership

Technology Domains

Semiconductors

Photonics

Electro-Optics

Directed Energy Systems

Artificial Intelligence

Automation

Advanced Manufacturing

Sensor Systems

Control Systems

FPGA Systems

SELECTED CAREER ACHIEVEMENTS

Business Transformation

Transform the AT&T Long Lines Fiber Optic Chipset business from a loss-producing operation into the most profitable Strategic Business Unit within AT&T Microelectronics, generating approximately **$250M annual net profit on $500M annual revenue**.

Manufacturing Leadership

Led startup and deployment between two locations of all process engineers and scientists of a **$4B semiconductor wafer fabrication facility**, achieving production readiness within nine months after prior deployment efforts had remained unsuccessful for nearly two years.

Operational Excellence

Achieved **92–98% first-lot wafer yields** through manufacturing analytics, process control methodologies, AI-based optimization systems, and operational discipline.

Growth Execution

Supported manufacturing and organizational growth during periods of **year-over-year production volume doubling**.

Innovation Leadership

Developed technologies spanning semiconductor manufacturing, silicon photonics, electro-optical systems, directed energy systems, automated manufacturing, and AI-driven optimization.

PROFESSIONAL EXPERIENCE

GEMYND INSTITUTE
Founder & Principal Researcher
01/01/2025 – Present

Independent research institute focused on systems architecture, Synthetic Intelligence, cognition, engineering convergence, economic systems, and civilization-scale infrastructure design. White papers published in Acedemia.edu, Researchgate.net, Gemynd Institute, Linkedin (2.5 million views), Gemyndfoundation.substack.com

Key Contributions

• Founded and direct an independent research institute dedicated to convergence science, Synthetic Intelligence, systems architecture, and multidisciplinary research.

• Authored and published original white papers spanning Artificial Intelligence, cognitive architectures, semiconductor manufacturing, directed energy systems, systems engineering, economics, governance, and technological innovation.

• Developed the Synthetic Intelligence Formation framework, exploring intelligence development through formation, coherence, and systems integration.

• Conduct interdisciplinary research integrating engineering, neuroscience, AI, economics, governance, and large-scale systems design.

Research Areas

Systems Architecture • Artificial Intelligence • Cognitive Systems • Complex Systems Engineering • Semiconductor Manufacturing • Directed Energy Systems • Governance Systems • Economic Systems • Engineering Innovation • Human-Machine Collaboration

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MZA Associates

Senior Electro-Optical Systems Architect

- Led development and integration of advanced directed-energy and electro-optical systems supporting HELIOS, AHEL, and next-generation beam director programs.
- Directed multidisciplinary engineering teams spanning optics, controls, electronics, software, thermal systems, and mechanical design.
- Established and managed optical, prototype, and servo laboratories supporting rapid development, integration, and risk reduction.
- Led system architecture activities involving power distribution, thermal management, acquisition and tracking, stabilization, and platform integration.
- Directed vendor evaluation, subsystem selection, and technology maturation activities supporting advanced defense programs.
- Managed complex trade studies balancing performance, reliability, manufacturability, cost, schedule, and SWAP-C constraints.
- Led integration efforts across government, customer, internal engineering, and supplier organizations.

SKORPIOS TECHNOLOGIES
Senior Optoelectronics Engineer Architect

01/01/2016 to 01/01/2019

• Designed and deployed fully automated robotic optical alignment systems achieving nanometer-level precision.
• Developed wafer-level optical testing and aging systems.
• Led manufacturing automation initiatives supporting silicon photonics production.
• Solved critical optical transceiver yield and reliability issues.

SILICON LABS
Senior Test Development Engineer

01/01/2003 to 01/01/2013

• Developed low jitter test instrument for production test of ultra low jitter performance working with Agilent Technologies.

Led NPI deployment of advanced timing products from development through high-volume production.
• Developed adaptive test systems reducing characterization time from hours to seconds.
• Created automated tuning and calibration algorithms for advanced oscillator technologies.
• Implemented production optimization strategies supporting millions of units annually.

AT&T BELL LABS / LUCENT / AGERE
Systems Architect / Technical Leader

01/01/1988 to01/01/ 2003

• Led transfer and production bring-up of a $4B GaAs SARGIC HEMT EPI fabrication facility.
• Achieved 92–98% first-lot wafer yield during fab deployment.

Identified and corrected systemic manufacturing limitations that had resisted traditional process-engineering approaches by developing proprietary yield-learning methodologies integrating manufacturing analytics, relational databases, test infrastructure, device physics, and production data, transforming the business from losses to approximately $250M annual net profit on $500M annual sales during a period of year-over-year volume doubling.

• Developed proprietary manufacturing analytics methodologies enabling process optimization in highly complex semiconductor production environments where conventional engineering and algebraic models had failed.
• Developed the first SONET automated test platform, reducing production test time from 30 minutes to 8 seconds while enabling high-volume deployment of next-generation fiber-optic transceivers.
• Developed RF membrane probe technology to increase profit margin, worlds first Membrane Probe technology.
• Led multidisciplinary teams spanning process engineering, test engineering, device engineering, software, and manufacturing.

AMERICAN ELECTRONICS LABORATORIES (AEL)
RF Design Engineer

01/01/1986 to 01/01/1988

• Designed electronic warfare RF systems supporting F-15 aircraft programs, including airborne mission-system integration and production test architectures.
• Developed automated RF production test equipment.
• Designed microwave filtering and signal analysis systems.

- Invented narrow skirt reflective microwave filter for an SRM Electronic Warfare module.

RETS COLLEGE
Adjunct Professor – Electrical Engineering and Mathematics
Evening Division |

01/01/1985–01/01/1987

• Invited to join the faculty following graduation with a 4.0 GPA.
• Taught Electrical Engineering Theory and Mathematics courses in the evening division while simultaneously working full-time in Electronic Warfare engineering.
• Developed and delivered instruction in circuit theory, electrical analysis, mathematics, and engineering fundamentals.
• Mentored students pursuing careers in electronics, engineering technology, and technical disciplines.
• Translated complex engineering concepts into practical and understandable instruction for diverse student populations.
• Demonstrated early leadership in technical communication, systems thinking, and engineering education.

TECHNICAL TOOLS

Systems Engineering • MBSE • Requirements Management • FPGA • Embedded Systems • Servo Control • Motion Control • Optical Systems • Electro-Optics • Directed Energy • Sensor Fusion • AI/ML • Neural Networks • MATLAB • Python • Automation • Semiconductor Manufacturing • Reliability Engineering • Root Cause Analysis • Test Engineering • Manufacturing Engineering • Product Lifecycle Management

EDUCATION

Associate Degree – Electronics Engineering

Additional Technical Education:
Bell Labs Technical Programs
AT&T MBA Management Development Programs
Advanced Semiconductor Manufacturing
Artificial Intelligence and Neural Network Development

CLEARANCE

Former U.S. Department of Defense Secret Clearance