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"Briefly describe your duties and responsibilities in your current job."

Physicists in the Private Sector

PhDs educated in the US 10-15 years earlier

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About the Study

The PhD Plus 10 Study was designed to examine the longer-term outcomes of physics doctorates. While initial outcomes of physics PhDs are studied regularly by the American Institute of Physics, data about mid-career PhD physicists remain scarce. This study was conducted to fill that gap in our knowledge. It identified physicists who earned their PhDs in the US during 1996, 1997, 2000, and 2001, and collected data from those who could be located and who were employed in the US in 2011. The data from this mid-career study supplement the initial employment data. The PhD Plus 10 Study was funded by the American Institute of Physics (AIP) and was conducted by the AIP Statistical Research Center (SRC).

Of the mid-career physicists who responded to the PhD Plus 10 Study, 503 were employed in the US private sector. This document is part of a set of reports about those physicists. A data-rich report titled *Common Careers of Physicists in the Private Sector* is available on the SRC website. That report identified eight types of careers commonly pursued by PhD physicists in the private sector in the US. It includes detailed profiles of what physicists do in each of those types of careers.

This document complements the data-rich report. It is a compilation of the comments that mid-career physicists wrote in response to the open-ended question: "Briefly describe your duties and responsibilities in your current job."

The comments listed here will provide the readers with an appreciation for the breadth and variety of job duties and responsibilities reported by physicists in the private sector. As reflected in the Table of Contents, the comments are organized into the eight types of careers that are commonly pursued by PhD physicists in the private sector in the US. Some respondents described their duties in general terms. However, many physicists painted a vivid picture of the specific products, services and technical issues that they work on.

This document is a valuable resource that permits physicists to speak for themselves. However, readers are cautioned not to view this document as an accurate reflection of the most common duties and responsibilities cited by respondents. In fact, we deleted some comments that were repetitive in order to make the information more concise.

Table of Contents

Self-employed

As Head of Engineering, I'm responsible for building and maintaining the company's ecommerce web platform. I'm also in charge of managing and hiring staff.

Co-founder and co-owner of a small optical engineering product company.

Conduct research in physics education.

Consulting services in life sciences equipment and assay development, biophysics, patent valuation.

Creating a new transistor.

Design and manufacture inhalation exposure equipment for infectious disease research.

Developing new technologies and products, finding ways to implement them, also business strategy, but I also have a lot of leeway to try different ideas.

Founded a wireless communications company.

I founded the company about 5 years ago. We have about 7 employees, not all are full time. The responsibilities that "pay the bills" include performing on contract research and development projects, for which we may have had to write proposals. We are also building up our own manufacturing capability which requires doing test system and assembly system design. Finally, there are "sales" duties which include responding to requests for information and drumming up business.

I provide industrial physics and systems engineering consulting services, typically to companies developing life science instruments or complex imaging systems.

Lead a family-owned retail business.

[Company name withheld] is a woman-owned business dedicated to helping scientists succeed. I provide proposal review services, grant writing workshops, red team reviews, new media consulting, and other science consulting services for individuals, proposal teams, and the federal government. [Company name withheld] currently holds three NASA contracts, one for independent research on recent space science missions, one for e-mentoring of students in planetary science, and one for professional development for early career astrobiologists.

Owner and sole scientist of technology research and development company.

Self-employed (page 2 of 2)

Owner of photography studio, chief photographer.

Owner, president and chief consultant of [company name withheld], a small software consulting business in Chicago, specializing in software for scientific computing, especially in the field of neutrino astrophysics.

President of start-up company. I am full-time, there are several part-time consultants hired as needed. The classic 'chief cook and bottle washer' -- many and varied duties. Responsible for all normal business functions, as well as technical development, marketing, finance, etc.

R&D of optoelectronic devices as well as executive management duties of a startup company.

Software development, architecture, and company leadership.

Software development, medical software development, medical and pharmaceutical data analysis, pharmaceutical market analysis, educational software and program development.

Starting the company, recruiting initial key employees, researching the market/users/competitive landscape, building the initial software, selling to initial customers.

Finance

Build and run quantitative equity trading systems.

Build mathematical model predicting movements of bond prices.

C++ programming of financial software on Windows.

Chief architect for financial modeling software system in financial products.

Consulting on bank analytics topics related to SAP software.

Developing risk systems.

Ensuring that systems data required to manage a global trading portfolio is accurate and arrives to its destination systems in a timely manner to support mark to market, accounting and Value at Risk calculations.

Financial analysis and software development: Analyze need for software solutions in financial sales and trading, design and implement solutions.

Head a research team of about 12 physicists to build financial risk models.

I am developing software in Finance. I am also working part time as a Research Scientist with the permission of my full time employer, with the intention of doing both, or shifting to Physics full time.

I develop and implement mathematical models for buying and selling financial instruments such as equities and currencies.

I manage a global team that deploys code to test and production environments for online corporate banking. In addition, the team provides operational support for the stable running of the test environments.

I manage a group that researches the market behavior of futures and equities markets, and creates models and algorithms for high-speed trading and market making.

I trade stocks.

Improve software delivery for financial risk management and financial transactions in terms of speed, predictability, and quality.

Investment Management.

Finance (page 2 of 2)

Manage and consult with companies in investment portfolio.

Manage team effort on modeling financial markets.

Management and measurement of credit portfolio risk.

Modeling mortgage refinancing rates, from model development to implementation within an analytic framework. Research into trade strategies.

Optimize trading for a large asset manager.

Proprietary trading strategies for hedge fund clients.

Quant position in Commodities Modeling group. Developing pricers of derivatives on Commodities assets, supporting traders.

Quantitative Equity Derivatives Research and Modeling.

Run hedge fund.

Trading and real-time application design and development. Technical leadership.

Government Contractors

Algorithm development for simulation software, proposal writing, contract management, personnel management.

Analyze performance of Missile Defense Architectures and build briefings for customer.

Antenna, microwave and radar engineering and analysis: technical contributor.

Conduct engineering design activities for advanced concept weapon systems. Manage efforts of other engineers.

Design and fabrication of materials and device structures for novel electronic devices. I Perform material and device characterization (including AFM, SEM, Raman spectroscopy, and other techniques) and fabrication (including wet chemistry, thin film deposition, photolithography, and other techniques).

Design and implement vehicle electronics and embedded training software applications for military combat vehicles.

Design, development, and maintenance of electromagnetic propagation software. Development and promotion of propagation software licensing. Design and development of urban canyon propagation models and ad hoc communication network models in urban environments. Development and maintenance of terrain propagation models. Business development related to model development and EMI analysis. Modeling and simulation of environmental impacts and terrain diffraction on wireless communication systems. Maintenance of spectrum management software.

Design, simulation and measurement of novel semiconductor devices. Interact with fabrication engineers.

Designing and demonstrating devices, securing funding, leading and scheduling projects, writing reports.

Develop and perform data collection procedures and technical analysis for a variety of projects supporting USJFCOM.

Develop architectures and signal processing to improve the performance of RF sensors, in addition, I develop partners and opportunities for further work.

Evaluate, design, and test computer security systems, protocols, and networks.

Government Contractors (page 2 of 3)

Ground processing algorithm development and implementation for the GOES-R satellite Program.

I am the technical lead for the superconducting quantum information processing group.

I manage a program where we investigate all power and energy-related new technology developments (from universities to startups to large companies), and either: 1. marry them into our existing products and pursuits to discriminate them in the marketplace or 2. create new markets.

I provide Systems Engineering and Technical Assistance (SETA) support to a development organization within the Missile Defense Agency. My areas of expertise cover software development, testing, and algorithms. This background is applied across a range of tasks to include oversight of integration and testing activities, monitoring of defects, and technical risk assessment. I represent my organization's interests through participation in a variety of technical panels and working groups.

Internal Research and Development Program lead, proposal writing, Optics Characterization and test development.

IT-business enterprise architecturing and planning.

Laser Diagnostics & Spectroscopy.

Lead a team of software engineers in developing technical solutions for next generation of US Army vehicles.

Lead research and development programs contributing to addressing items of national importance.

Manage a small section of physicists.

Management of a team of engineers and technicians as an Integrated Product Team (IPT) Lead Engineer. Design and testing of high power laser and other optical systems. Presentations of program progress to customer at regular intervals.

My company primarily works on SBIR contracts with the federal gov't. I work on mitigation of atmospheric effects on radar signals. This involves radar signal processing and using atmospheric simulations.

Operations Research in support of aviation programs for [employer name withheld].

Government Contractors (page 3 of 3)

Perform system engineering (requirements definition, functional analysis, design synthesis, verification and validation) for space-based missions.

Photonics system design.

Proposal writing, leading technical teams of 10 engineers from multiple disciplines, technical lead for defense programs of $3-5 million/year, technical point of contact for government customers, creating and delivering technical presentations

Provide advice and assistance to Defense Threat Reduction Agency. Support project management of radiation detection development R&D including projects with materials and electronics development, and modeling and simulation of detector performance in lab and in operational environments. Write research topics, review proposals, support interagency reviews, provide analysis of gaps and recommend further research areas.

Research and development in synthetic aperture radar algorithms.

Running small Aerospace business.

Safety Analysis.

Serve as a staff member of a Navy command, providing analysis of operational issues, lessons learned of military operations, and support to concept development, military experimentation, and modeling and simulation.

Support Scientist for Satellite Oceanography at [employer name withheld].

Tech Lead for [satellite] data center

Technical support for the development and review of drinking water regulations, under contract to [federal agency].

Technological troubleshooter - when parts, assemblies or subsystems fail, I am part of the group of engineers who are assigned to fix them.

We do largely classified research related to intelligence gathering. In addition, we do some research for a private company which I cannot name and in the area of Homeland Security.

Industry - Primarily Engineering

Act in business development and product development capacities. Search for personnel and resources to keep business growing. Create relationships, partnerships and joint ventures with key business organizations.

Automatic inspection on wafers for defects.

Business Development, Technology Development, Corporate Management, Marketing, Sales, Employee Recruitment, Shareholder relations.

Characterize device performance, Design and Direct experiments, analyze data, perform basic computations, Give guidance for future product development.

Chief Technical Officer for startup. Lead product research and development and intellectual property development activities.

Choose and guide to completion technology creation projects that are then used in company's products manage patent portfolio train and mentor scientists and engineers.

Circuit design.

Communications and Network Systems Engineering.

Conduct first-principles calculations of components in alloys to improve performance. Devise and implement nondestructive evaluations methods.

Coordinate, project manage and compose requirements for web search engine features.

Customer-specific technology and process development for semiconductor equipment.

Design and build skin care device. Focus on the optical and sensor area.

Design and development of computed tomography scanners.

Design computer systems that meet telecommunication requirements, performance, cost, and environmental requirements.

Design CT scanners.

Design of MR hardware.

Industry – Primarily Engineering (page 2 of 6)

Design optical communications networks and pre-sales engineering.

Design RF filters for cellular phones.

Determine root issues in chip design and support the field engineers in customer interactions and provide feedback to the product engineers to improve software product.

Develop Algorithms for Image processing applications, including but not limited to Hyperspectral.

Develop and implement new technologies, advance knowledge about manufacturing process, enable process transfer to virtual factories.

Develop and manufacture fiber optical communication components, hardware and software.

Develop decision algorithms based on statistical machine learning as well as physical models conceive of and develop new product features author patents provide advice and consultation to senior leadership team direct and mentor junior scientists and engineers.

Develop plasma etching processes for far-future semiconductor chip technologies and support the needed hardware and infrastructure (technician training, tool monitoring, etc.).

Develop positioning and navigation systems.

Develop processes for etching with XeF2, run customer samples, gas flow modelling, machine assembly.

Develop processes to deposit metal on a variety of semiconductor devices. Develop process flows to integrate new materials. Act as a mentor to other engineers and oversee summer interns.

Develop software and circuits to assist in the testing of computer chips.

Develop software for atomic force microscopes and manage a software project.

Develop specifications for satellite communications systems.

Develop test and validation plans for wireless mobile computers.

Developing electronic systems for medical devices.

Developing software for simulating and optimizing oil and gas pipelines.

Industry – Primarily Engineering (page 3 of 6)

Development of image processing algorithms and automatic camera control algorithms, algorithm implementation on various hardware platforms (PC, DSP), characterization of prototype image sensors.

Development of motion recognition algorithms, understanding sensor data and the limits of the sensors.

Directing application for crystal growth technology and support customer application.

Do R&D in materials optimization.

Engineer for a large aerospace/defense company.

Engineering and science support for garment based ECG and other physiological monitoring.

First, own the over-all disposition operation of E-TEST/Device related fails for high-K metal gate process through the ramp portion of the technology cycle. This includes debug/root-cause analysis of process and testing related E-TEST fails. Second, own a portion/segment of the same process with regard to analysis and debug of electrical/device/e-test related signals. This second point includes split lot analysis to make an assessment of experimental lots that may or may not impact performance or simply shift some electrical parameters. Also, the second point includes analysis of pilot process changes compared to baseline.

Guide the development of crystal growth processes for solar grade silicon ingots to meet various criteria of performance and productivity in proto-type equipment.

Guide the development of equipment, systems, and software for RF and electromagnetic testing. Develop concepts for radiated performance testing of wireless devices. Work with national and international standards organizations to develop test and measurement standards in the wireless and electromagnetic industries. Provide training and presentations for customers and industry groups. Mentor other engineers and technical staff.

I design and implement software used by [company name withheld] in the engineering of aircraft engine compressor blades.

I manage a group that is responsible for all Intellectual Property and Computational Modeling at the company. We are also responsible for the sputter targets, which play a central role in the company's proprietary process technology.

Industry – Primarily Engineering (page 4 of 6)

I own the design of one aspect of a particular recording head. It involves looking at data pertaining to how this part of the head is built and how it performs and making decisions about modifications to the design or process.

I work at the interface of polymer science, colloidal science and imaging science. In the past three years I have worked on new architecture dry inks for electrophotographic applications and on novel ink formulations for inkjet printers.

Image quality optimization through hardware, software and print media systems engineering of thermal printing systems.

Implement statistical and machine learning algorithms in Matlab.

Lead a group of engineers to design, develop, maintain and optimize a global VPN communication services network.

Lead a team responsible for developing advance recording heads for disk drives.

Lead and manage a group of 20+ engineers and technicians in the design, development, and transfer to production of OEM lasers including mode-locked, q-switched, and fiber type lasers. Responsibilities include managing a multi-million dollar budget, solving complex resource issues, meeting with customers, hire/fire, etc.

Lithography process engineering.

Manage a group of nine engineers. 8/9 are PhDs in ME, ChemE. Responsible for mechanical design and model development for magnetic recording heads.

Manage a group of PhD level engineers and technicians in the area of thin films processing and materials science for magnetic disc drive read and write heads.

Manage an R&D organization of 90 technicians, engineers and scientists to design NMR spectrometers.

Manage collection of 4 engineering departments. Set priorities and tactically assign resources, set and implement strategies to meet gaps. Manage budgets as necessary.

Manage design, development, and production engineering for microwave resistor and attenuator manufacturer.

Manage engineering for biotech company.

Industry – Primarily Engineering (page 5 of 6)

Manage group of R&D scientists and engineers. Invent and develop new core technologies in flow cytometry. Manage the business unit's intellectual property portfolio. Participate in technical assessments and due diligence activities on startups and academic research.

Manage the RF engineering staff for the manufacture of military electronics systems.

Manage wafer fabrication for MEMS inertial sensors.

Management of a product line of CMOS image sensors.

Managing sponsored research in universities, performing simulations to evaluate devices.

Measurement System Design.

Metrology for etch process development. Our company makes etchers for the semiconductor industry. I work in a lab providing Metrology applications support for different etch experiments.

New technology development and reliability assessment. Non-volatile flash memory development with a focus on the reliability aspects of the technology performance.

Nuclear Instrumentation.

Numerical modeling and process development in Czochralski growth of silicon crystals.

Optical and product design for optical transceiver.

Optical modeling of concentrated solar power plant.

Oversee research, product development and pilot production of products based on volume Bragg gratings produced in photo-thermo-refractive glasses. Products ranging from Raman spectroscopy to fiber-optic communications.

Perform TCAD simulations for solar cell design and development. Perform parameter extraction and failure analysis on experimental data.

Photolithography Projects for the entire wafer fab. These are both in support of current fab production and for future process development.

Prepare and advocate patent applications for software developers and optics designers.

Industry – Primarily Engineering (page 6 of 6)

Provide technical service for library equipment. Interact with sales representatives, customers, architects and contractor. Provide manufacturing support for magnetic materials and RFID tags used in products.

R&D for advanced technology, PET. Work with global team on several aspects for PET and multi-modality medical imaging.

Responsible for leading programs for the development of new products in the area of heavy duty gas turbines.

Running MOCVD reactors to make high-brightness GaN LEDs.

Sales of optical test and measurement equipment.

Semiconductor IC reliability. Manage reliability operations in two domestic US locations. Qualify all new products. Support all process and package technology qualifications. Determine qualification status of all products and authorize release of non-qualified products. Perform risk assessments and debug of qualification failures. Participate in review of customer requirement documents. Oversee operations of the laboratories (capital equipment purchases, equipment repairs/maintenance/calibration, reliability board Hardware/Software, processes and procedures). Prepare and participate in ISO/TS certification audits. Train new engineers.

SiC carbide growth and characterization and applications engineering.

Software engineer developing web application software, web services, mostly based on the Drupal CMS.

Supervise a small (4 people) team to invent, develop, commercialize instrumentation. Teach user training. Develop data analysis methods and algorithms. Publish papers in peer review journals.

Work with design engineering to define design specifications and to evaluate manufacturing possibility. Define integration scheme and process flow. Link design and process specifications. Define test modules and procedures to characterize processes. Work with module engineering to develop processes to meet specifications. Design and execute DOE experiments in development stage to ensure robust processes. Identify process issues by parametric data analysis and failure analysis. Provide solutions to problems and drive activities from implementation to finalization.

Work with existing customers to help them understand how to use and get the most benefit out of our product.

Industry - Primarily Computer Science

Actually worked for [employer name removed] for 10 years as vice president of Software in charge of the software development for that company. It was acquired by [company name withheld] a few years ago. I now serve various roles depending on the projects work on (like product manager, software architect, ...).

Adding new features to large software system. Debugging the system. Computer programming, including database development.

Analyze data and develop predictive fraud detection systems.

Assist customers with software development and production operations based on Red Hat software. Help manage support readiness for several products to ensure that the support staff s ready to support new products.

Core runtime search-engine development, search-engine performance-testing systems, mail image-, attachment-compression.

Creating plans for testing software frameworks. Developing programs for running those tests.

Crypto r&d promote health of industry patents standards.

Define products that delight customers.

Demonstrate software to prospective customers answer questions about functionality and underlying technology respond to RFPs generally support the sales process.

Design and implement instrument drivers.

Design complete solutions for software problems having to do with electronic maps, navigation systems, and location based services.

Design software to manage Microsoft's cloud enterprise systems.

Designing and writing the software for service applications that drive the e-commerce part of the company's web site and the data maintenance applications and database applications for storing and maintaining the data used by the web site.

Designing, reviewing and setting architectural direction for security of our products and supporting infrastructure. Setting standards, and designing and updating the software security assurance process.

Industry – Primarily Computer Science (page 2 of 3)

Determine what new technologies can improve our products for our customers. Determine how to integrate those technologies into or current products, or replace or supplement current product offerings. Manage the product development team.

Develop and maintain complex software support and design databases, maintain servers, mentor junior programmers.

Guide a group of 35 engineers in the research and development of mathematics-related software.

I manage architecture and technology decisions. I guide and mentor across the organization, including professional services, software development, marketing and sales. I actively participate in the management of the company.

I work in customer support for a vendor of enterprise medical record, billing, scheduling, etc. database systems. I manage a small team that provides database management system support as well as OS (mainly commercial Unix), server, and storage consulting to customers.

I work in Pre-sales Systems Engineering focused on solution development and sales to Public Sector customers (US Fed and State/Local Government). I lead a team of advanced IT Architects (several have PhDs in Computer Science).

I write engineering/performance software for gas power turbines.

I'm the co-founder of an Internet startup. I oversee all technical aspects of the company and manage about a dozen people. I set the current and future technical direction of the company. I help raise funding for the company.

IT consulting. Pre- and Post- Sales Engineering in storage and data protection.

Lead business analytics and data integration activities. Manage global team. Manage >$2m budget. Maintain all business intelligence applications. Responsible for development projects.

Leading an R&D team to develop video processing/compression algorithm and architect them for ASIC implementation.

Management of professional services organization in technology development and solution deployment of human identification systems on the national and regional scale.

Managing a team of program managers to deliver software functionality.

Industry – Primarily Computer Science (page 3 of 3)

Oversee the creation of products and assets involving application of Analytics to the Electricity Utility industry.

Overseeing all release projects for Oracle [division name withheld]. Managing software development and test teams.

Performance analysis and tuning of hardware with scientific, engineering, and other technical (analysis) applications.

Research new technologies for a software company. Align technology with business interest. Evangelizing and mentoring. Finding new talent. Writing code.

Responsible for development and implementation of the analytical core of products that we are developing. Contribute to business strategy, sales efforts, customer education, and requirements gathering for new products.

Responsible for helping customers apply our software to solve semiconductor manufacturing problems.

Software Engineering Basic research in the area of vehicle traffic prediction and computation.

Static and Dynamic Compiler optimization research.

System Administration for a network of 4 servers and about 50 computers in a company of 100

Technical leadership of sw development projects for printer and multi-function devices.

Theoretical analysis to predict the mean time between failure and trends analysis for the field returns product. Assigned database trainer.

Web development.

Write and debug file system software for a NAS gateway and appliance.

Writing software for phototooling applications.

Industry - Primarily Physics

InP optical chips and modules testing.

Principal investigator for several projects in optical amplifiers/lasers and integrated optics for DoD and private industry.. -Fiber Amplifier/Laser module design, modeling, test and packaging. Telcordia reliability test procedures. -Design, simulation, test & meas. of waveguide based devices such as Array Waveguide Gratings, TO switches, Electro-optic Modulator, Photonic Crystal Waveguides. -Fiber coupling for passive and active planar waveguide devices. -Electro-Optic material characterizations (i.e. r33, spectroscopy, n, propagation loss etc.). -DoD proposal ideas and concepts for novel optical modules via teaming with universities and research institutions. -Project planning /management of multi-disciplinary team as well as end-reports and presentations to DoD and private customers.

Considered a respected authority within the company. Lead multidisciplinary research, design or development projects. Conceive and develop advanced new models, theoretical concepts, scientific investigations, experiments, instruments, and/or data analysis techniques. Advise and motivate team members or staff. May give invited talks and/or presentations at customer locations or international scientific meetings/conferences/workshops. Publish patents.

Design research vision and plan strategy, oversee all company research, manage all technical staff.

Design, build, and test atom optic based inertial sensors.

Designing airport security X-ray devices.

Develop novel lasers based on optical fibers.

Develop novel optical and photonics techniques for biological and environmental sensing applications.

Develop processes for ion implanters.

Develop science educational software for higher-ed.

Develop, manufacture, and sell femtosecond Ti:sapphire lasers.

Developing Monte Carlo software for radiotherapy planning.

Direct the technology development for the company. This includes basic research and product development. I am also charged with developing an intellectual property portfolio.

Industry – Primarily Physics (page 2 of 3)

Director of R&D.

I continue to design instrumentation for the characterization of macromolecules, but I now also manage the product development efforts.

I oversee the research team, which is developing immunodiagnostic technology, forensics technology, and research instrumentation.

In charge of R&D, Engineering, and Manufacturing.

Laser development for ophthalmology.

Lead a team of scientist in the area of SPECT imaging.

Lead the system design, development and integration of hybrid optical prototypes within a multidisciplinary team including the optical and electrical design as well as supporting measurement and characterization of optical systems, subsystems and devices.

Manage a group of 10 research scientists, write grant proposals, perform research, participate in day-to-day operations of the business (accounting, financial, administrative, etc.).

Manage small business including marketing, finance, sales, operations. Perform research and engineering to develop new products. Perform engineering tasks to test products.

Manage the Engineering and R&D groups of the Security and Inspection Division of [employer name withheld]. This includes long term development as well as current projects under contract.

Manage the group developing materials and devices for MRAM.

Materials Characterization and basic research and development.

Nanofabrication/characterization of devices, primarily to evaluate their potential for the hard disk drive industry. Collaboration with universities and companies to leverage company resources.

New product characterization New product development Metrology system development and upgrade.

Perform independent PhD level research technical leader in a field supervise other PhD level scientists program management business development.

Industry – Primarily Physics (page 3 of 3)

Plan and conduct experiments in research and product development. Build structure-property models for new materials. Work on project teams. Supervise 2.5 technicians.

Primarily involved with programming for web-based educational products aimed at K-12 math and science students. Also work with the curriculum side of things.

Propose and manage R&D projects provide guidance for field projects (review data acquisition design and contractor processing technology, QC and interpret results).

R&D for SPECT systems and Gamma cameras.

Radiation sensor research, development, testing and evaluation.

Research and development in x-ray computed tomography medical imaging.

Semiconductor substrate engineering. Fabrication, development and analysis of new semiconductor devices. Growth, characterization and simulation of strained crystalline structures.

Solar physics instrumentation design, space- and ground-based observing, committee memberships and chairmanships, publishing original research.

Technical expert for strategic planning, intellectual property, and research and development for cardiovascular imaging. Responsible for in-house intellectual property activity, technical feasibility studies, external grant management, image processing R&D, and strategic partner development.

To develop optic and optic based new systems.

Industry – Primarily Other STEM Fields

I am at the intersection of technology and strategy working with clients to convert business needs into effective deliverables and technology advances into market opportunities.

All areas of technical marketing, product roadmaps, marcom, etc.

Correlation of manufacturing data to yield.

Develop calibrations and diagnostics to improve the efficiency of the manufacturing process. Work closely with systems engineers to develop a better understanding of the performance of a DNA sequencing machine.

Develop decision-support algorithms and for [employer name withheld]. Currently working on algorithms to forecast delays and backlogs in hospital patient flow (e.g. availability of emergency, surgical and inpatient services).

Directing scientific programming and modeling.

Equipment installation, qualifications and customer training.

I analyze genomic sequencing data, figure out why it doesn't behave as it should, and write diagnostic tools to aid in the analysis of our sequencing data.

I manage a team of 4 senior software developers, working on applications to support chemists in R&D labs.

Innovation.

Lead a group of 10 PhD mathematicians in designing algorithms for large scale optimization problems. Responsible for establishing, prioritizing, and resourcing all research related activities.

Lead groups across multiple factories in improving 1 layer of the computer chip manufacturing process.

Manage failure analysis and reliability studies for one of the major company sites.

Manage projects related to customization of our software to fit customer needs.

Manage the technical direction of the company, interface with customers, investors and Board of Directors to represent the technology.

Industry – Primarily Other STEM Fields (page 2 of 2)

Manager Regulatory Affairs and Quality Systems for a medical device company.

Mathematical modeling of disease and health care.

New product development. Maintenance and enhancement of optical lab management system. Maintenance of laser production equipment. Maintenance of eye aberrometer instrument.

R&D of digital imaging: thermal printing system.

Research and software development for geophysics data processing.

Work with customers in a technical sales capacity working with their applications.

Industry- Primarily Non-STEM Fields

Business Development, New Project Implementation, Team Leadership, Analytic thought leadership, Training.

Database management and programming.

Design algorithms to solve business problems, Document the algorithms for software developers to implement in commercial products, and support issues related to algorithms found by QA and clients.

Direct commercial strategy for acquired power plants, and lead due diligence for potential assets including fundamental market forecasting.

Draft Patent Applications Handle other duties related to patent prosecution. Assist clients in assessing their inventions.

I am the Director of a manufacturing group that produces highly technical components for the laser industry. Responsibilities include directing managers, supervisors, and engineers to achieve operation goals.

I help companies or other inventive entities develop market-relevant patent portfolios along strategic business lines.

I perform valuation of a portion of my company's life insurance business, calculating required reserves.

I provide consulting services to multiple companies in the areas of management, IT, strategy and marketing.

Intellectual Property Attorney in private practice.

Intellectual property litigation.

Lead all strategic and operational aspects of an Energy Services company with responsibility for financial performance, including rapid growth aspirations.

Leading the corporate strategy group. Responsible for strategic initiatives, operations initiatives, market trend assessment, enterprise risk analysis, Executive Committees, and general support to Senior Executives.

Industry – Primarily Non-STEM Fields (page 2 of 2)

Manage a group of science advisors, analyze patents, research and analyze technology.

Manage projects in business strategy for health care clients.

Manufacturing analysis for efficiency improvement. Training and development for employees to implement manufacturing best practices.

Marketing and Business Development for the launch of a disruptive DNA sequencing technology to researchers, clinicians and applied markets.

Participate on a team that is charged with reducing Working Capital in the company. Run weekly team meetings. Be the project manager for a process improvement project.

Patent litigation and patent drafting and prosecution.

Practicing patent law -- advise clients re patent strategy, draft and file applications and obtain patents, assess applicability of others' patents to client's products.

Primarily I run the team that localizes [employer name withheld] products into languages around the world.

Responsible for a $50M business unit designing, manufacturing, and selling metrology equipment to the semiconductor industry.

Responsible for Operations (Yields, Manufacturing, Cost, etc.) for a $100M / quarter business unit.

Run internal operations of management consulting firm.