

# Alex Lapayev

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- **SYSTEMS ANALYSIS**
- **RESEARCH AND DEVELOPMENT**
- **HARDWARE ELECTRONIC MIXED SIGNAL DESIGN**

Online Profile: <http://www.lapayev.com>

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Seeking a position of a hardware electronics engineer with an established company.

## Summary of Qualifications:

Highly qualified **Hardware Electronics Engineer - Designer** with more than 30 years of experience in developing state-of-the-art solutions bringing an electronic design from a concept to a final product. Highly experienced in all areas of modern electronics including industrial, automotive and home electronics equipment.

I'm a successful team player and also work efficiently with minimal supervision.

## Technical Summary:

- **Electronic Circuit Design** including precision **Mixed Signal Design with modeling and simulation tools**: Altium Designer, Mentor Graphics, PADS, Cadence, Allegro, PSpice Altium, OrCAD Capture CIS/OrCAD-PSpice, Design-Lab 8 PSpice. EDA libraries and simulation development environment management.
- **Analog Signal Design, low noise, ultra linear**: measurement and sensing - sensors, meters and probes. Communication, data, audio, video, transmitting and receiving. Audio Hi-Fi, High-End solutions, speakers. Signal splitting, selection, filtering, amplifying. Servo-drive and electro-motors power control.
- **Radio Frequency and Microwave Design, high efficiency and performance**: RF/microwave solutions, signal transmitting and receiving including GNSS: GPS, GLONASS, Galileo and Compass. IRIDIUM satellite solutions, Bluetooth, Wi-Fi, ZigBee, GSM, Radio and TV. FCC/EMI conditions. RF/microwave PCB layout with a strong matched impedance; Layers stack-up management. Antennas: patch, chip, helical, PCB printed custom, Yagi, traveling-wave, log-periodic, parabolic-dish, etc.
- **Digital Signal Design, high speed**: microcontrollers and Digital Signal Processing (DSP). Digital measurement and sensing, digital audio, video, data solutions. Also, design based on use of programmable logic array CPLD and FPGA.
- **Switching and Power Supply Design, high precision and efficiency**: up to 5 kW. High and low voltage power regulators and controllers. Linear and Switched Mode Power Supplies (SMPS), Resonant and Zero Crossing technology, AC/DC, DC/AC, AC/AC, DC/DC converters. Transformers, batteries, recharging and backup. Super-Cap solutions. Bi-Polar, MOSFET, IGBT.
- **Automotive Electronics Design**: Diagnostic, OBD-II, control, measuring, automotive satellite and audio/video solutions.
- **Printed Circuit Board Design: Highly experienced in sophisticated Analog Low Noise, RF/Microwave and Digital High Speed PCB design**: manual routing, layout with strong requirements of the impedance, layers stack-up's design concept with EMI/EMC and UL conditions, EDA library management. Excellent knowledge of Ground and Power project concept and requirements. Altium Designer, Mentor Graphics PCB Expedition, PADS, PCB Design Flow. OrCAD PCB Designer, etc.

**Possess extensive experience in all phases of product development from inception to production** including research, development and design. Technical PRD – product requirement documents, BOM – parts and material selection, qualification and risk assessment. Create output job files, manufacture documents, test plans and procedures. UL hazardous locations certifying. Liaison between management, electrical, manufacture and testing to determine circuit design requirements. Skilled in analyzing, troubleshooting and resolving various problems.

## Major published work:

- Analog Input/output compensated. The modern solution to analog processing of data transmitting  
[http://lapayev.com/articles/analog\\_input\\_output\\_compensated/](http://lapayev.com/articles/analog_input_output_compensated/)
- FilterWorkBanch. The Windows' application; calculates high and low-pass Analog Active Filters (Bessel, Butterworth and Chebyshev). The application is mainly targeted at an experienced developer. Freeware.  
<http://lapayev.com/fwb/index.html>
- The Fascination of Four Wheels. Automotive battery issues.  
[http://lapayev.com/articles/fascination\\_of\\_four\\_wheels/](http://lapayev.com/articles/fascination_of_four_wheels/)
- Tables and calcs. Very useful tables, solution and short apps.  
<http://lapayev.com/info.html>  
<http://lapayev.com/articles.html>

**The main hobby** is resolving of the High-Quality Sound sophisticated issues. Research and development, design of industrial, home and automotive modern Hi-Fi / High-End audio solutions.

**Education: Masters of Electronics and Computer Sciences**: Science and Technology Development. State University of Informational Science and Radio Electronics. Minsk. **6-year program**.

- **Citizenship - U.S. citizen**

## Professional experience:

### Senior Hardware Electronics Engineer.

June, 2013 – present: Franklin Fueling Systems / INCON – the subsidiary of Franklin Electric Co., Saco, ME.

<http://www.franklinfueling.com/americas/en>

**Research and development, design** of high quality measuring petroleum equipment. Dispensing Systems, Fuel Management, High Precision Measuring Systems, sensors, meters and probes. Major design:

- Digital Probes – Inventory and Leak Detection - <http://www.franklinfueling.com/americas/1936/featured/26189/en/#Highlights>
- Digital Sensors - <http://www.franklinfueling.com/americas/fms/featured/24083/en/#Highlights>
- OPTIMIZER3 - <http://franklingrid.com/products/incon-circuit-breaker-monitors/optimizer3/>

### Personal Contributions:

**Development and design of new electronic solutions, helping the company to advance to new markets.**

**Franklin Electric Co., won its first ever R&D 100 Award ('Oscars of Innovation') for the newly developed OPTIMIZER3.**

- Research and development; Design concept; Risk Assessment; BoM - parts and material selection;
- Schematics - Mixed Signal Design: Analog Low Noise Circuits, RF/microwave, Power, Digital High Speed;
- Simulation – PSpice development environment management;
- PCB Layout - management and design. Altium Designer development environment management;
- Prepared for UL and FCC EMI/EMC certification. Created manufacturing documentation, manuals and test procedures;

### Senior Hardware Electronics Engineer.

January, 2011 – June 2013: DeLorme (Garmin) Publishing Company, Yarmouth, ME <https://www.garmin.com/en-US/>

**Research and development, design** - GNSS (GPS, GLONASS, Galileo, Compass) solutions; IRIDIUM satellite data communication with GPS and Bluetooth, ZigBee, Wi-Fi. For the consumer, professional, army, navy and government markets.

Major achievements: [http://lapayev.com/lnreach\\_Alex\\_Lapayev.pdf](http://lapayev.com/lnreach_Alex_Lapayev.pdf)

**"InReach" - 1.0 / 1.5 / 2.0 - Two-Way Satellite Communicators** with Global Coverage:

<https://www.garmin.com/en-US/blog/outdoor/delorme-inreach-adding-peace-mind-next-adventure/>

- Two-way satellite messaging and pole-to-pole global coverage with GPS.
- Message delivery confirmation and interactive SOS.
- Multiple InReach users can communicate directly with each other to share information and locations.

### Personal Contributions:

**Developed new electronics solutions, which increased the company market share.**

**Garmin® Ltd. acquired Delorme Company due to its interest in the 'InReach' satellite communicators' family of devices.**

- Research and development; Design concept; Risk Assessment; BoM - parts and material selection.
- Schematics - Mixed signal circuit design includes Analog Low Noise, RF/microwave, Power and Digital High Speed design.
- PSpice and RF/Microwave simulation. PSpice development environment management.
- PCB Layout - management and design. Altium Designer development environment management; Output Job Files.
- Prepared for FCC EMI/EMC certification. Created manufacturing documentation, manuals and test procedures;

### Hardware Electronics Engineer.

January, 2007– February, 2010: VAIS Technology, Greenwood Village, CO <http://www.vaistech.com>

**Research and development, design** adjustment of high quality, radio and audio/video integrations, control units, power supplies and other devices which allows third party installation of Satellite Radio, DVD-HD players, cellular phones for most Toyota/Lexus, Nissan/Infiniti, and Honda/Acura vehicles.

Major achievements:

- **SIRIUS SCC1 Digital Satellite Radio receiver.** The universal tuner box. The SCC1 delivers full control of third party XM Satellite Radio directly through a vehicle's audio system. Can be used in Toyota/Lexus, Nissan and Honda.
- **Automotive Apple® iPod™- SoundLinQ2 Interface.** The universal audio and video adapter, designed to provide superior sound and video. Can be used in Toyota/Lexus, Nissan/Infiniti and Honda/Acura.
- **Automotive High-End Digital Audio Player.** The High-End device with practically free of distortion audio. Includes HDD and the unique analog output driver - [http://lapayev.com/articles/analog\\_input\\_output\\_compensated/](http://lapayev.com/articles/analog_input_output_compensated/) . Can be used in Toyota/Lexus, Nissan/Infiniti and Honda/Acura vehicles.
- **High-End Home Active Speaker Bar.** High-quality sound, very low distortion. The unique schematics produce high-grade, with broad surround stereo sound. The system includes only one compact speaker enclosure bar.

### Personal Contributions:

**Developed new engineering solutions which improved VAIS Technology financial standing.**

Research & Development; Design concept; technical PRD; Project's timeline; BoM - parts selection;

- Schematics - Mixed signal circuit design includes Audio, Video, RF, Power and Digital High Speed design;
- PCB Layout – design, Mentor Graphics library management and new components creation; Output Job Files;
- PSpice simulation. Model management and creating new models.

### Prior experience available on request

Thank you,  
Alex Lapayev, M.S., Electronics Designer.