

# ROMAN PIETRZAK

## SOFTWARE ENGINEER

### HEAD OF SOFTWARE / LEAD DEVELOPER

#### LOCATION, AVAILABILITY, UPDATES

Remote, based in Europe (UK and Poland)  
Availability: 1 week  
CV updated 2025-01-15

#### CONTACT

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#### QUICK SUMMARY

## 20+ YEARS IN SOFTWARE DEVELOPMENT

- **HEAD/LEAD (20+ PPL), STARTUP LEAD**
  - **FULL STACK WEB-DEV (20+ YEARS EXPERIENCE, EXPERT LEVEL)**
    - **NODE.JS, GOLANG, PYTHON, JAVASCRIPT/TYPESCRIPT, WEBSOCKETS, GRAPHQL, REDIS, MONGODB, MYSQL, SERVERLESS, PHP/LARAVEL**
    - **EDGE SERVERS: CLOUDFLARE WORKERS**
    - **REACT, WEBPACK, HTML 5, CSS/LESS/STYLUS, WEBGL, CANVAS, SVG, VUE, ANGULAR**
    - **ADTECH, KYC/AML, SUMSUB, BLOCKCHAIN, STRIPE, ADYEN**
  - **DEV-OPS, INFRASTRUCTURE ENGINEERING, AUTOMATIONS OF DEPLOYMENT, MONITORING, TESTING (20+ YEARS EXPERIENCE)**
    - **AWS SDK/CDK, GCP, DOCKER, HELM, KUBERNETES, TERRAFORM, LINUX**
    - **GRAFANA, PROMETHEUS, ELASTICSEARCH**
    - **TDD, DEVELOPMENT IN TEST (SDET), SELENIUM, KARMA, MOCHA, JEST, CIRCLECI**
  - **DATA ENGINEERING & MACHINE LEARNING**
    - **APACHE AIRFLOW, BIGQUERY, GCP PUB/SUB, KAFKA, SNOWFLOW**
  - **SCALING**
    - **>1TB/DAY, >400MB/s, 100s OF SERVERS, 5MS RESPONSES**
  - **EMBEDDED SOFTWARE DEVELOPMENT EXPERT (20+ YEARS EXPERIENCE)**
    - **EMBEDDED, DIGITAL TV (STB), IOT, LINUX, BARE-METAL, ARM/CORTEX**
    - **C, QT, C++, JAVA, OPENGL**
- ...more detailed info in "Skills & Experience" section on page #2

#### \* INTRO \*

I LOVE DEVELOPING SOFTWARE, THEREFORE I OFTEN WORK ON MULTIPLE PROJECTS IN PARALLEL, SO SOME WORK OVERLAP.  
PLEASE HAVE A LOOK AT [YOSH.KE.MU/PORTFOLIO](https://yosh.ke.mu/portfolio) FOR MORE VISUAL CV

- SECTION 1 - CURRENT PROJECTS
- SECTION 2 - SKILLS AND EXPERIENCE
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- SECTION 6 - EDUCATION

#### 1 - RECENT WORK

- **THE OZONE PROJECT [2023 JUL - NOW] - HEAD OF SOFTWARE**
  - I'M FULLY RESPONSIBLE FOR THE SOFTWARE STACK IN THE COMPANY
    - STRATEGY, EXECUTION AND 3<sup>RD</sup> PARTY INTERACTIONS
    - DELIVERED FAST & SCALABLE SOFTWARE STACK - MILLISECONDS PROCESSING, 100'S OF SERVERS, 100K'S OF REQ/S
    - COOPERATE WITH THE DATA ENGINEERING TEAM TO PROCESS 100'S OF TB/DAY FOR REAL-TIME ANALYTICS AND MACHINE LEARNING
  - Adtech application (SSP - Supply Side Platform)
  - Leading a team of 20+ Software Engineers
  - Examples of the software architecture delivered:
    - redefined code-driven processes to be data-driven
      - changes that needed "a sprint+release", take few minutes now (aka "Rule Engine")
      - easy experimenting on % of production traffic (aka "Experimentation Platform") - experiment in minutes/hours comparing to months
    - replaced 3rd-party Data Pipeline solutions (Snowplow) with in-house solution (aka "Bid Harvester")
      - cost saving +100k\$/month in cloud bills
      - full flexibility of how we process the data - enrich, monitor etc.
      - full control of the stack: scaling, changes, deployments
  - Building the software using:
    - code: golang, node.js, Java, Typescript/Javascript, Python
    - devops/infra: AWS, GCP, k8s, CloudFlare, prometheus/grafana/datadog, CI/CD, Jenkins
    - tooling: Airflow, Elastic Search, PostgreSQL, MongoDB, BigQuery, GCP Pub/Sub, kafka, websockets
    - Event Sourcing, CQRS, Domain Driven Design patterns
    - real-time oriented style with modern websocket/events based interaction
    - hands-on when needed (I do code!)
  - I'm helping **the team** to achieve the goals by:
    - building an efficient, truly agile, fully remote, international team
      - redefining the relationship of software developers with product/business - the ownership of software is embedded into the culture
      - individuals lead the initiative, shorter meetings, smaller groups, quicker feedback - truly agile!
    - encouraging self-growth, software craftsmanship, collaboration, knowledge sharing
      - **"extraordinary team achieves extraordinary goals"**
- **LONDONLINK [2021 FEB - 2024 JAN] - HEAD OF SOFTWARE**
  - I'M FULLY RESPONSIBLE FOR THE SOFTWARE STACK IN THE COMPANY

- STRATEGY, EXECUTION AND 3<sup>RD</sup> PARTY INTERACTIONS
- SECURITY, COMPLIANCE, RELIABILITY
- Fintech application within the **crypto industry**
  - Compliance with standards of KYC, AML, transaction monitoring, GDPR etc.
  - Blockchain integration, including 3<sup>rd</sup> party apps, e.g. Fireblocks, Chainalysis, Elliptic, Crystal
  - Bank APIs, payment providers, KYC/AML APIs (e.g. SumSub)
- Integrated variety of ad-hoc external systems (3rd party apps, spreadsheets, single-purpose tools) into one consistent environment for clients and staff:
  - Introduced or standardized multiple processes/workflows in the company to allow better automation
  - with long-term security and efficiency goals in mind - on both office/workplace and software development domains
  - following the regulatory/compliance needs (KYC, AML, transaction monitoring...)
- (re)Built the team:
  - small and efficient (truly agile), fully remote, cost effective, international experts in their fields
- I proposed the software architecture, cloud infrastructure and set of development principles. Then executed and ensured user's adoption:
  - Designed, developed and deployed complex product of backend apps, frontend apps (customer and internal facing), **KISS**:
    - stack: real-time oriented with modern websocket/events based interaction on all layers,
    - coding: fullstack javascript, node.js, React, typescript, javascript, Chakra, C/C++ and Rust,
    - Event Sourcing, CQRS and other Domain Driven Design patterns
    - Devops/Infra: microservices, AWS (Amplify, Fargate, Elastic Containers - ECS, Organisations etc.), Docker, CI/CD, Jenkins, Apache Airflow, Cloud Security, Elastic Search, kubernetes
    - mongoDB, kafka, postgresSQL
    - external integrations: bank APIs, crypto APIs, KYC APIs, Fireblocks, sumsub, sendgrid and more
  - TDD oriented process, convenient dev environment, PR/CI/CD/testing processes that are flexible and improve development experience. Result: high quality software with happy devs.
    - mocha, jest, selenium, jenkins, monitoring and logging pipelines,

...FULL WORK HISTORY IN SECTION #5...

## 2 - SKILLS & EXPERIENCE (20+ YEARS)

### WEB DEVELOPMENT (FULL STACK)

- front: **JavaScript (ES6), TypeScript, React.js, Vue.js, Angular, Webpack, CoffeeScript, WebGL, HTML/CSS, Websockets, Ajax**, MVC frameworks, Canvas, JQuery, Stylus
- server-side: **Node.js, express.js, Kafka, PHP/Laravel, Amazon Cloud (AWS/SDK/CDK), MongoDB (NoSQL), MySQL, C++**
- cross-browser development, browser internals, standards
- experience with non-trivial performance goals, examples:
  - **website load below 50ms**
  - **websockets** for all browser-server interaction
  - **webGL** as layout/design renderer
- non-typical environments
  - **QT**-extended webkit browser running on SetTopBox
  - web-API management for embedded devices like STBs, Raspberry Pi, etc.
- auto-tests: **Selenium, Jest, Mocha.js, node.js/python** scripted
- old-school: Flash, ActionScript - (2000-2006) experience in optimization of large ActionScript applications

### GENERAL SOFTWARE DEVELOPMENT

- **languages**:
  - **node.js, Javascript**, Typescript
  - **C and C++** for embedded devices and desktop (PC)
  - **Qt** is my thing, but worked with other frameworks too
  - **DirectX** and **GL** experience
  - bare metal and drivers code
- **PHP**
- **Python** for scripting and TDD
- **Java** for PC, Set Top Box, mobile
- assembler for x86, SH4, MIPS, ARM and old-school
- old-school: C++ Builder, Pascal/Delphi, Basic, Amos, C64
- techs and tools:
  - **automation, TDD/BDD, development in tests (SDET)**
  - **GIT**, svn, cvs and code review tools,
  - cmake, makefile, continuous integration, Jenkins, ant, openSuse build system (obs),
  - JIRA, RTC, bugzilla
  - Kanban, Agile, Scrum

### DEVOPS

- **AWS**: CDK/SDK, EC2, FARGATE, ECS, SERVERLESS
- deployment **HELM, KUBERNETES, DOCKER, RANCHER**
- performance & monitoring **GRAFANA, PROMETHEUS, JMETER**
- scaling, sharding, partitioning, load-balancing – achieving high-scale performance goals
- security, SSL, HTTPS, X.509 certificates

### EMBEDDED DEV

- **IoT CAMERAS/CAR DEVICES**
- **BROADCOM AND ST SoC** for SetTopBox, from driver-level to GUI applications
- **LPC CORTEX M0 PURE-C** bare-metal implementation, 1-Wire, RS485, RF, etc.
- **RASPBERRY-PI**
- **MINOR FPGA/VHDL**
- **PC CARDS**

### GFX RENDERING

- **LOW-LEVEL**: framebuffer, blitter, freetype2, multi-core rendering,
- modern animated GUI frameworks, Qt – architect level
- OpenGL, **webGL, GLSL**, vertex/pixel/fragment shader, 2D/3D, DirectX,

### SETTOPBOX & AUDIO/VIDEO

- all layers: applications, drivers, middleware (MHP, webkit)
- GUIs for SetTopBox: C/C++, Qt, GL (shaders), JavaScript (HTML) and Java (MHP)
- Digital TV specifics: mpeg, dvb-t, dvb-s, dvb-c, atsc, (de)multiplexers, PSI/SI, ETSI 300 468, CA, teletext, subtitles
- OS/21, linux, STAPI, Broadcom APIs
- **DELTA CAST CARD**: SDI video analysis application - QT/GL

## GUIs AND UIX

- GUI design with **procedural graphics and animation**
- QT/QML, GL, Java Swing, C++ Borland VCL, direct WinAPI and Flash (ActionScript),
- 2D/3D realtime charting of huge numerical databases (stock prices, government stats, company data etc.)
- embedded GUI design for SetTopBox

## OTHER

- **LOWLEVEL NETWORKING**: sockets, ipv6, http, https, ssl, curl, bjson, **graphQL**, rest, RPC, winInet, wifi stack, RADIUS, QNetwork,
- **WINAPI**: GDI, DirectX, WinInet, shell integration, system-services,
- **DATABASES**: **SQL** and **NoSQL (mysql, mongoDB)**
- **LINUX**: gdb, kernel/drivers and user-space development,
- **DISTRIBUTED PROCESSING** based on client-server-worker architecture, (**C++**, **Java**, **node.js**, **PHP**)

### TECHNICAL EXPERIENCE SPECIFICS

- **AUTOMATION IS KING**: Test Driven Development (**TDD**), Continuous Integration, test-racks, development tooling
- heavy understanding of multitasking, memory management, parallel processing, multi-platform messaging and synchronization etc.
- **REBUILD FUNCTIONALITY WITH better performance, lower memory usage**, better resource managing etc. - struggling with performance ? ask me for examples...
- **SYSTEM ANALYSIS**: a lot of experience with analyzing architecture in multi-layer projects (from user application level and network services, through middleware, down to drivers level) to achieve extraordinary goals

### BUSINESS EXPERIENCE

- running a successful business in UK (KEMU STUDIO LIMITED) and Poland (KEMU STUDIO)
- remote teams and cost/quality effective offshore teams
- involved into cross-company projects – with a good sense of marketing-vs-technical goals

### HUMAN FACTOR (AKA "SOFT SKILLS")

- strong passion to IT - **I develop software a lot more than 8h/5d**
- good team play, strong **team leading**, high culture of work,
- strong understanding of whole **software development process**: define, develop, test, deploy
- very good in documentation writing, I did many forms of knowledge sharing (coaching, mentoring)
- open to new techs, languages, APIs, tools – happy to learn
- good in R&D – ask questions, understand documentation, propose and execute tests to proof or negate concepts,
- worked in multi-national teams. Have been working onsite in: Poland, UK, Germany, Netherlands, USA, Taiwan

## 3 - SIDE PROJECTS AS KEMU STUDIO

I'm Kemu Studio owner since 1996 and I've proudly delivered several side projects:

- delivered **100+ projects** for **EMBEDDED, IoT, WEB, SERVERS, CLOUD, DESKTOP AND MOBILE APPS, DATA PROCESSING&VISUALISATION, GAMES, AUTOMATION,**
- **FOUNDED CALCULLA.COM AND CALCULLA.PL**
  - **150k+ unique users/month** from english and polish language base
  - sold/licensed calculators source code to external websites (infor.pl, wieszjak.pl and some minors),
- **MANAGING** cost efficient business in two countries: UK (KEMU STUDIO LIMITED) and Poland (KEMU STUDIO POLAND)
- **LEADING** devs, artists, testers and hardware designers, team-work in remote and non-remote basis
- **freelanced**:
  - freelancer.com - **10/10 score points** in all contracts,
  - infor.pl - one of the largest law&economy portals in Poland – **JAVASCRIPT** programming
  - dogo.pl - web studio – **PHP+JAVASCRIPT** websites and **C++** applications
  - idownload.com - USA software reseller (non-existent currently) – **C++** applications with **DIRECTX**

## 4 - SOME EXAMPLE PROJECTS I'M PROUD OF

- **IN 2016 THE WEB GUI FOR EMBEDDED DEVICE (PROFESSIONAL DIGITALTV RECEIVER) - EXAMPLE MIX OF WEB+EMBEDDED**
- **TARGET IN 2016**: implement modern Web GUI on old embedded device from 2004
- **LOOKS IMPOSSIBLE**: only 0.5MB free memory of 128MB total, no recent libraries support, **embedded** operating system (non-linux), C/C++ only, bare metal
- **STEP #1**: reclaimed 6.5 MB by optimising graphics memory usage by direct use of hardware composer on CPU
- **STEP #2**: used **NODE.JS** on PC to implement GUI (**HTML+JS**) itself with modern **JAVASCRIPT** libraries
- **STEP #3**: implemented **JSON API** on HTTP socket in pure **C/C++** to allow **WebGUI** control
- **STEP #4**: the website has been served in the form of "binary blob" through simplified **HTTP server** in **C/C++**
- **IN 2008 - 2014 - CALCULLA.COM - DEVELOPER OF JS-PHP FULL STACK (AND TEAM LEADER)**
- **HTTP://V1.CALCULLA.COM - ARCHIVED VERSION STILL AVAILABLE ONLINE**
- **70+ JAVASCRIPT** calculators for various purposes: TAXES, HEALTH, ELECTRONICS, ETC.
- **PHP BACKEND + JAVASCRIPT/COFFEESCRIPT FRONTEND**
- **MIX OF VARIOUS PHP FRAMEWORKS TO ACHIEVE PERFORMANCE GOALS: 40-60MS RENDERING TIME OF WHOLE PAGE**
- **IN 2015 THE CHROMA SAMPLING IN DIGITAL TV PROJECT - AS EXAMPLE MIX OF C LOW-LEVEL DRIVER+FPGA+VIDEO PROCESSING**
- **PROBLEM**: no support for specific chroma sampling mode (mandatory for customer). CPU vendor says "**IT IS IMPOSSIBLE**"
- **TOOL**: implemented benchmarking toolset in **Qt (C++)** to prove the concept with use of OpenGL shaders
- **SOLUTION**: **DESIGNED PRE-FILTER ON CPU (C/C++/MATH) TO CHEAT HARDWARE, THEN USED FPGA (VHDL) TO RECOVER ORIGINAL CHROMA SAMPLES FOR THE IMAGE**

## 5 - HISTORY OF PRIMARY OCCUPATION

### CALCULLA.COM [2015 - NOW] - WEB FULL-STACK TECHNICAL LEAD

- I'm leading a team of developers in **AGILE + KANBAN**, re-building Calculla website in **NODE.JS** (IT WAS PHP BEFORE)
- Huge web application:
  - 300+ calculators (JavaScript)
  - backend microservices supporting variety of business domains (e.g. stock exchange and forex feeds, chemistry databases, math formulas etc.)
- built on specialized OOP/MVC framework to support the size and performance of the project:
  - **SINGLEPAGEAPPLICATION** with heavy **WebSockets** utilization with fallbacks to **AJAX** (REST AND NO-REST APIs)
  - **NODE.JS + EXPRESS + JAVASCRIPT ES6/ES5/COFFEESCRIPT**
  - **NoSQL (MONGODB) + MySQL** mix
- **REACT.JS**-like rendering to **HTML 5 AND DOM AND SVG AND WebGL**
  - Multi-target rendering in **JAVASCRIPT** into browser DOM and server-side **HTML, XML, JSON**
  - **WebGL** USED FOR WEB-DESIGN and COMPONENTS – dynamic layout, gfx rendered by **WebGL + SVG** code
  - **STYLUS** for **CSS**, **TERSER** AND **BROWSIFY** for minifying, **GULP** for build process – a webpack-like advanced toolset,
- Automated testing: **TDD** with **SELENIUM, MOCHA, JEST** – wrote and manage **29k tests**

- **AWS, DOCKER, GULP, JAKE, BABEL, TERSER/UGLIFY, WEBPACK**
- **MODUSBOX.COM** [2019 OCT – 2021] – LEAD DEVELOPER
  - Developing **MOJALOOP** - open source software for creating digital payments platforms that connect all customers, merchants, banks, and other financial providers in a country's economy
  - Working in performance optimization team: **Scaled & optimized** from 100 ops/s to 5k/s
  - Techs:
    - **BACKEND: NODE.JS, KAFKA, REDIS, MONGODB, MYSQL, HAPI, RDKAFKA(C/C++)**
    - **DEVOPS: AWS, DOCKER, KUBERNETES, MICROK8S, HELM, RANCHER, GRAFANA, PROMETHEUS, CIRCLECI**
- **CHRONOMICS.COM** [2020-10– 2021-01] – TRANSITION PROJECT LEAD
  - Lead of transition to **MICROSERVICES+ NODE.JS + REACT** based architecture (from PHP/Laravel + Python monolith)
  - React, node.js, AWS SDK, PHP/Laravel, Python, serverless
  - AWS CDK based deployments to Fargate (Elastic Containers), Docker, Cloud Security
- **RSCONNECT.COM** [2020-07– 2020-10] – TRANSITION PROJECT LEAD
  - Lead of new project to develop fresh IoT solution for live-tracing of a car fleet, using 3<sup>rd</sup> party hardware and AI solutions
  - Lead 3 people team
    - embedded **C/C++** on camera device, with **TCP/SSL**, smart downloads, Wifi/4G connectivity, with vendor camera SDK (VIA)
    - **NODE.JS, REACT** a live/realtime application for management of fleet
    - AWS IoT Core and AWS services deployments
- **SHUTTERSTOCK.COM** [2018-10– 2020-03] – FULL STACK LEAD DEVELOPER
  - I'm redeveloping admin application, leading 5-7 devs,
    - software stack for managing \$600M/year of sales,
    - moving from 15 years old Perl codebase to **NODE.JS** based microservices application
  - **NODE, REACT, VUE, GRAPHQL + APOLLO** (as gateway-API to microservices), **JAVASCRIPT ES6, JEST** (API + unit tests)
  - **DOCKER, KUBERNETES, HELM, JENKINS, AWS**
- **NODEDCTED.COM** [2016 - 2019] - EMBEDDED C & WEB FULL-STACK
  - Full product development and delivery for
    - **High Frequency Arbitrary Waveform Generator (up to 16 MHz, 14bit DAC, 256Msamples)**
  - Full stack from hardware to React:
    - **REACT.JS** based **GUI** connected by **WEBSOCKET** to API
    - **NODE.JS** server API
    - embedded controller (**ARM C**) with **BJSON** API on raw TCP sockets
    - **PCB AND HARDWARE DESIGN (ELECTRICAL)**
- **MINISTRY OF JUSTICE** [2018-08 - 2018-10] – INTERIM FULL-STACK TECHNICAL LEAD
  - I was leading a series of 1-3 week spikes, proving various tech solutions for building court digitisation platform
    - leading small team of developers in **AGILE + KANBAN** process,
    - **JAVASCRIPT ES6/ES5/TYPESCRIPT + ANGULAR + NUNJUCKS**
    - **TDD** driven development of gateway API with **NODE.JS + EXPRESS.JS + MOCHA + JEST**
- **CISCO/SKY** - [2017-01 - 2018-08]
  - **SKYQ PROJECT** – WEB FULL-STACK ENGINEER & C/C++ DEVELOPER
  - **BIG-DATA WEB-APP** for stats/logs and management of stress-test racks for **160+ units**
    - Frontend with realtime-updates: **JAVASCRIPT ES6, REACT.JS, D3.JS CHARTS, WEBSOCKETS**
    - Backend: **NODE.JS, JAVASCRIPT ES6, C/C++** and **PYTHON**
    - Other techs: **JENKINS, LINUX**
  - **C/C++** code for **EMBEDDED LINUX SETTOPBOX, ARM** architecture for advanced SoCs from ST and Broadcom
    - embedded full stack development: linux drivers (**C**), Middleware stack (**C/C++**) and user SkyQ application in **C++/QT**
    - encrypted video/audio streaming over network to iPad/iPhone, Android and other STBs
  - **DEVELOPED THE AUTOMATIC TEST-STATION IN NODE.JS, JAVASCRIPT ES6 FOR IMPROVING THE DEV PROCESS**
- **XEROX (UK, POOLE)** - [2016-11 - 2016-12]
  - I developed browser APIs in **JAVASCRIPT ES6**
  - Machine Learning models to cost-reduce the support-line experience
  - Testing with **KARMA, SELENIUM** in **NODE.JS**
  - **JAVA** as main backend server
- **ERICSSON (UK, SOUTHAMPTON)** - [2014-04 – 2016-11]
  - **DIGITALTV EMBEDDED SOFTWARE, WEB FULL-STACK AND SDET AUTOMATION** Consultant
    - I developed new web interface using: **NODE.JS, REACT.JS, JAVASCRIPT, HTML, JSON API**
    - I developed major Digital TV features on embedded level
      - **C++** in application and server code
      - **LOW-LEVEL/DRIVER CODE IN C** for video filters, graphics rendering (blitter, compositor), ST CPU drivers
      - **DIGITALTV SPECIFICS:** osd graphics, teletext, subtitles, resolution scaling (SD/HD/1080p), DVB SI/PSI
        - **AUDIO/VIDEO DECODING:** IP/UDP, MPEG2/H264, SDI-SD/HD/3G, 4K
        - some **FPGA/VHDL** debugging
    - I made a lot of **AUTOMATION** of development and auto-tests, **TDD** – **NODE.JS, MOCHA.JS, PYTHON**
      - **C++/QT/GL:** PICTURE QUALITY ANALYSIS/COMPARISON TOOLS, GUI-S FOR SOFTWARE TOOLS
- **SKY (UK, LONDON)** - [2013-08 – 2014-03] – software engineer
  - new Set Top Box application development: SkyQ, Ethan
  - modern animated GUI from scratch, **QT/GL** driven, performance focused, user input method innovations
  - **QT, C++, OpenGL (pixel shaders)**, optimisation of rendering in embedded OpenGL,
  - Digital TV specifics: **MPEG SI/PSI, DVB-S SI** models, MVC,
  - **TDD, automation**, unit tests, scrum, jira, svn, git,
  - **node.js, JavaScript** for internal website tools
- **PACE (UK, LEEDS)** - [2013-01] – 2013-08] – software engineer in **Pace**, UK, Saltaire (Bradford/Leeds area),
  - Set Top Box software development – embedded, api-server and web-browser,
  - main tasks:
    - implement and deliver software with customer requested features and fixes in **agile/scrumb** based sprints,
    - issue identification, debugging, problem solving, tests on-site,
    - **test farms:** introducing **Test Driven Development** into existing software creation process, system & stability tests implementation
    - multi-site cooperation: Saltaire (UK), Helsinki (Finland), Warsaw (Poland) and France,

- **techs:**
  - **C, C++, QT, QML**, svn, cvs, gstreamer, DVB, MPEG SI/PSI, scanning/tuning, Conditional Access, Nagra, Dbus, network PVR, gdb, **TDD**, multi-threading, dmalloc, DVB-C, DVB-T,
  - portal integration: VOD, QT webkit plugins, **JavaScript API, HTML5, CSS**, javascript portals code verification,
  - remote test-farm automation on customer's site: python, bash, ssh, scripting,
- **ADB - [2012-08 - 2012-12] – Senior Software Engineer in Advanced Digital Broadcast**, Poland
  - webkit browser integration into STB stack: **C/C++, QT**, http/https, embedded linux, optimization, tests, makefile,
  - web-portals for STB (VOD services, video/audio libraries, YouTube TV/Leanback etc.): frontend, **HTML5, JavaScript, Qt** webkit plugins, external APIs integration,
  - more techs: git, Gerrit, svn, auto-build, auto-test, TDD,
- **CODEPROJECT.COM - [2012-03 - 2012-07] – developer/architect** for CodeProject.com (Canada)
  - remote team in Zielona Góra (west Poland)
  - project description and goals
  - **launched a team** located in Poland dedicated for project,
  - designed & deployed high-volume web application (8M+ users) on **AWS Cloud**
    - **Node.js/Express** servers as core API, Ruby On Rails servers as application server, **MongoDB** as databases, cache by Redis, external applications by pub-sub style API with elements of **OAuth** authorization,
  - parts of common code for browser and server based on **JavaScript/CoffeeScript**,
  - heavy user-team, rights-roles, access-lists based environment, messaging, advanced payments management,
  - **TDD/BDD** driven,
  - main tasks:
    - **webservice API** definition, backend implementation (**nodeJS**), databases structure (**MongoDB**), frontend integration,
    - distributed system architecture design (API servers load balancing, databases sharding, external apps API, worker queues),
    - core API implementation in CoffeeScript for node.js server,
    - **auto-tests suite (1k+ tests)** design and implementation – mostly Mocha based (mixed TDD/BDD style),
    - **team leading (3 people)**,
- **Tieto - [2011-05 - 2012-03] – Lead Software Engineer in Tieto Poland** (Wrocław, south-west Poland)
  - Main tasks:
    - Design and implementation of software architecture and automated system/unit tests,
    - Team leading related tasks, including knowledge exchange, coaching, etc.
  - Significant projects:
    - **NOVEMBER 2011 – FEBRUARY 2012 (4 MONTHS) – Nokia** (Ulm, Germany)
      - Wifi and mobile 2G/3G internet connectivity middleware:
        - **C++, Qt-Network**, linux, connman, git,
        - system tests design and implementation, **TDD** introduction,
        - Wifi and 2G/3G test farm: architecture and implementation,
        - **C++/curl** implementation of controllers for access points from different vendors (DLink, Linksys, Cisco, etc.)
        - **team leading for system-test group**, multi-site coordination, multi-language team, scrum driven,
    - **AUGUST 2011 – OCTOBER 2011 (3 MONTHS) - Digital Route** (digitalroute.com):
      - Scalable, high performance distributed data processing in MediationZone – mostly related to intergration of multi-vendor 2G/3G billing systems:
        - **Java and APL** development, unit & system tests,
        - **distributed execution**: software auto-versioning, distributed configs, fault-control, etc.
        - performance oriented development,
        - team leading for 2 teams (development and test),
    - **JUNE 2011 – JULY 2011** – application and middleware development for STB (HDTV, QT, GUI, SH4, MIPS),
- **ADB - [2005-08 - 2011-05] - Software Developer in Advanced Digital Broadcast** (ADB Poland).
  - based in Zielona Góra, west Poland,
  - Overview:
    - Set-top box embedded code: **C, C++, Java (MHP), SH4 (RISC), Broadcom (MIPS) assembler**,
    - PC-based tools for automation and optimization of development and testing process: **C++, Java, PHP, svn, ant**,
    - Software architecture design, implementation, unit/system tests, **TDD**,
  - development on different layers:
    - **GUI applications (Java/C)**, user experience, GUI composition toolsets,
    - **middleware (OpenTV, MHP)** and porting layers, high-level subsystems/services,
    - **drivers** (native os, linux kernel),
  - Significant tasks, projects, experience
  - GUI related
    - good understanding of animation, graphical effects, pixel-level math, alpha blending, scaling, tap-filtering, shading, etc.
    - in cooperation with internal and external art designers implemented many good "look & feel" applications for several STB vendors mostly in UK, Norway, Italy, Switzerland, Spain, USA and Poland,
    - developed core architecture & implementation of cross-platform graphical stack for **HighDefinition TV** devices, including **drivers, PIL layers, MHP (Java)** and native API's, as well as user front-end application design,
    - development related to HighDefinition TV: **32-bit graphics, HD resolution, HDMI/HDCP** support,
    - designed and implemented fonts system (based on **freetype2 rendering**), image decoding (**png/jpg/svg**) and widget rendering (proprietary) subsystems,
    - good understanding of **graphic-related hardware** (blitters), implemented drivers for ST7100 and 7109 chips blitter (kernel-space and user-space), also some development for Broadcom blitters,
  - STB related
    - **DVB SI (Service Information)** scans and monitoring for terrestrial (DVB-T), satellite (DVB-S) and cable (DVB-C) environments, with country-specifics for Italy, Norway, Spain, Switzerland and UK,
    - digital television specifics: electronic program guide (epg/event information), parental control, languages selection for audio and teletext, hard-of-hearing, power saving modes,
    - good understanding of dvb/mpeg related processing with on-chip acceleration (transport stream parsing, demux, dma),
  - performance tuning, memory usage profiling, multi-threading, multi-level optimization of software stacks,
  - web-services integration (VOD, remote recording, browser integration etc.),
  - cross-platform development, including web-servers and mobile integration into SetTopBox services,
- **2000-2005** - network administration of 80-100 workstation-sized network in technical education unit (ZSTiO school in Zielona Góra). Main tasks:
  - network maintenance: Windows Advanced Server Domain, Linux servers, routers etc.
  - development and maintenance of databases, software tools and website (**C/C++/PHP**)
  - lot of teamwork: introducing IT to non-IT people
- **1999-2000** – local McDonald's
  - my first real job with a lot of team-play :)

## 6 - EDUCATION

- University of Zielona Góra - 5 years of university level education, **Master's Degree in Software Engineering**
- Electronics & IT School in Zielona Góra - 5 years of secondary school, **Technical Degree in Computer Systems**