Home page: content to show what we do. www.VegaEDS.com

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| --- |
| Electronics Design Services Hardware Software Firmware FPGA Layout Compliance |
| MENU bar: HOME / SERVICES / TECHNOLOGIES / ~~WORKFLOW / more links tbd~~ / ABOUT |
| |  |  | | --- | --- | | Services  * Full turnkey solutions. * Hourly consultation. * Individual engineer working on contract for you. * Partial design services within your development work frame. * Small production runs. | Supporting  * Customers with insufficient own engineering resources. * Companies with seldom needs for electronic designs. * Software companies looking for custom or integrated of-the-shelf hardware. * Start-ups and proof of concepts ventures. | | Balanced Outsourcing Cost effective and controlled operation is possible. Two tightly connected engineering teams: North America - Toronto and East Europe - Belgrade. | Free If you need advice on a solution, or simply want to evaluate if we could support you, call us. We will invest a reasonable amount of time, free of charge, to help you shape a solution or resolve D:\MURINA\VegaEDS\VegaEDS_WebPages\images\vega_star_69x67.gifa problem. | |
| Copyright © Vega Omni Ltd. [Disclaimer](file:///D:\\MURINA\\VegaEDS\\VegaEDS_WebPages\\disclaimer.html" \o "disclaimer) |

links\_0 - this is the main menu bar (link\_0). Each menu item is a MAIN TOPIC. The active pages starting from this level down, have the topic highlighted.

Field #0: this field contains the current page path. Below that is the text that appears in all pages under the same main topic.

Field #1: On the left hand side of the screen is the first sublevel of a main topic, “links\_1”. Obviously, one set of links\_1 items for each of the main topics. Each entry is a link, and active link is highlighted. After selecting main topic, the first item on the links\_1 list is highlighted. After that, user selects other links\_1 items.

Field #2: To the right, following the same principle is the next level, links\_2. Each item from the links\_1 list has one set of links\_2 items. Each links\_2 item is a key point and a link. The difference from links\_1, is that no item from links\_2 is selected until user selects it. This way default is: Main topic highlighted, links\_1 topic highlighted, links\_2 topics shown but no one highlighted, and filed #3 contains text/graphics related to *main topic >> links\_1*. When the user selects an item from links\_2, that item becomes highlighted and field #3 changes to text/graphics related to *main topic >> links\_1 >> links\_2.*

Field #3. As explained above. This filed is next to the right side of the screen. Big graphics and majority of the text is here.

For mobile devices, consider field #0 at the top, fields #1 and #2 under field #0, and field #3 at the bottom taking the whole screen width.

The table below shows the page content when user selects SERVICES under the main menu, and Hardware Development Selected under links\_1. Note that main menu items do not have drop down items, the sublinks are always shown in field #1.

|  |  |  |  |
| --- | --- | --- | --- |
| links\_0 | **HOME SERVICES WORKFLOW TECHNOLOGIES ABOUT** | | |
| Filed #0 | Link\_0 >> Link\_1 >> Link\_2 path  Services we provide range from supporting your team, be part of your team, to full system development.  We may also provide small production runs, an ideal one stop solution for start-up ventures. | | |
|  | **D:\MURINA\VegaEDS\VegaEDS_WebPages\images\hw_icon_40x40.gifHardware Development**  **Software and Algorithms**  **PCB Layout**  **FPGA Design**  **Test Platforms**  **Compliance Testing**  **~~Mechanicals & Production~~**  **Turnkey Solutions**  **Consulting**    D:\MURINA\VegaEDS\VegaEDS_WebPages\images\consulting_icon_40x40.gifD:\MURINA\VegaEDS\VegaEDS_WebPages\images\tp_icon_40x40.gif  D:\MURINA\VegaEDS\VegaEDS_WebPages\images\pcb_icon_40x40.gif  D:\MURINA\VegaEDS\VegaEDS_WebPages\images\fpga_icon_40x40.gifFiled #1: links\_1 | **Hardware Development**  Hardware Base for Software Products  Team Support  System from Scratch  Field #2: links\_2 , key points | D:\MURINA\VegaEDS\VegaEDS_WebPages\images\ss_hardware_372x254.jpg  We develop electronic circuits to run software applications, run dedicated hardwired algorithms, support mechanical subsystems, provide power or combination of all. Here link to TECHNOLOIGES (tbd).  Example picture  Field #3: text/graphic content |

Through the Services, add links to Technology pages for clarification and education – tbd…

Filed # 2 content for: Services *>> Hardware Development - this field contains the following items*

**Hardware Base for Software Products**

**Team Support**

**System from Scratch**

Filed # 3 content for: Services *>>* ***Hardware Development*** *- this field content when no item is selected within field #2.*

We develop electronic circuits to run software applications, run dedicated hardwired algorithms, support mechanical subsystems, provide power or combination of all.

Filed # 3 content for: Services *>> Hardware Development >>* ***Hardware Base for Software Products***

Software products have years of lifespan, but tend to evolve on almost daily basis. For many businesses the hardware is only a necessary tool to run their products, the software. Such hardware platforms may need to be designed, or upgraded only once in a long period.

Keeping a hardware group on standby is very expensive and this is where we position ourselves. Come to us with your requirements, we develop, build, certify and provide future support.

Filed # 3 content for: Services *>> Hardware Development >>* ***Team Support***

Supporting overwhelmed hardware teams. With the experience on our side, we believe we can quickly understand your product and get in line with the core group.

Flexible enough to follow your design principles, we readily accept small and big assignments.

Filed # 3 content for: Services *>> Hardware Development >>* ***System from Scratch***

In this scenario we investigate functionality, environment, available technologies, regulatory requirements, product expected life span, cost sensitivity, upgradeability, manufacturability, schedules and other aspects. These are all the foundations of the actual development that follow.

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Filed # 2 content for: Services *>>* ***Software and Algorithms*** *- this field contains the following items*

**Boot and Operating System**

**Application Software**

**Algorithms**

Filed # 3 content for: Services *>> Software and Algorithms - this field content when no item is selected within field #2.*

With any processor on a Printed Circuit Board, it is all dead silicon without the software.

Filed # 3 content for: Services *>> Software and Algorithms >>* ***Boot and Operating System***

Our software engineers bring platforms to operational level. That is: create the boot code, install OS, install, modify or create drivers, write Power on Self tests (POST) and handle configuration parameters.

This work is also essential to hardware team for verification purposes.

Filed # 3 content for: Services *>> Software and Algorithms >>* ***Application Software***

Boot and POST is what we almost always do for platforms that we develop. When it comes to application software, it is so versatile that there is hardly any team in the world that can say in advance, “Yes, we can do it”! We do not want to make false promises. We may have in house knowledge to execute, or need to work with your or some other external support.

Filed # 3 content for: Services *>> Software and Algorithms >>* ***Algorithms***

For real time systems the control of connected devices is the key component. We take the task of working on the specific algorithm: what, how, when and why something happens.

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Filed # 2 content for: Services *>>* ***PCB Layout*** *- this field contains the following items*

**Basic Layout Service**

**Extended Service**

Filed # 3 content for: Services *>>* ***PCB Layout*** *- this field content when no item is selected within field #2.*

The technology available to board manufacturer is also our limit. We work with fine pitch BGA packages, High Density Interconnects, blind vias, buried vias, tackle high speed signal integrity issues…

Filed # 3 content for: Services *>> PCB Layout >>* ***Basic Layout Service***

With basic layout service, close cooperation with schematic engineers on your side is imperative.

Filed # 3 content for: Services *>> PCB Layout >>* ***Extended Service***

Our layout designers are hardware engineers. We dig into your design to understand it better to make good component placement, calculate impedances, create stack, identify critical nets and EMI issues, etc. The result is extensive list of rules for the design, which must also be in line with good DFM and DFT practices (Design for Manufacturing, Design for Testing).

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Filed # 2 content for: Services *>>* ***FPGA Design*** *- this field contains the following items*

**Xilinx, Altera, Lattice**

Filed # 3 content for: Services *>> FPGA Design - this field content when no item is selected within field #2.*

Although considered part of the hardware development, engineers specialize on working with Field Programmable Gate Arrays.

Filed # 3 content for: Services *>> FPGA Design >>* ***Xilinx, Altera, Lattice***

Our team will tackle designs from scratch, incorporate third party IPs, do timing analysis and improvements, run simulations.

As a whole, FPGA solution deliverables are source code, test bench code and documentation.

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Filed # 2 content for: Services *>>* ***Test Platforms*** *- this field contains the following items*

**Hardware**

**Software**

Filed # 3 content for: Services *>> Test Platforms - this field content when no item is selected within field #2.*

Production test jigs for submodules or fully assembled systems.

Filed # 3 content for: Services *>> Test Platforms >>* ***Hardware***

We develop supporting hardware for production tests (test jigs) such as load simulations, power and stimulus for independent submodule testing, etc.

In Circuit Test beds (ICT) down to 40 mils density.

Filed # 3 content for: Services *>> Test Platforms >>* ***Software***

As part of our software services we also develop manufacturing test codes. These easy to follow, guided tests are invaluable for manufacturing process. Early detection of errors during the production usually save thousands of dollars and the reputation of delivering quality products is priceless.

Test code may run on the actual platform or on supporting hardware.

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Filed # 2 content for: Services *>>* ***Compliance Testing*** *- this field contains the following items*

**Design for EMI Compliance**

**Lab Testing**

Filed # 3 content for: Services *>>* ***Compliance Testing*** *- this field content when no item is selected within field #2.*

Electro Magnetic Interference (Emission and Susceptibility) Compliance is of primary concern for complex electronic devices.

Filed # 3 content for: Services *>> Compliance Testing >>* ***Design for EMI Compliance***

Design for Compliance to any regulatory standard is inherent part of any development, with EMI being one of the big ticket items. In this field more eyes is always better. Contact us for ides and reviews.

Filed # 3 content for: Services *>> Compliance Testing >>* ***Lab Testing***

With on-premises certified lab we can tackle EMI issues fast and efficiently.

~~(external link to Idvorski lab)~~

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Filed # 3 content for: Services *>> Compliance Testing >>* ***Turnkey Solutions***

**Turnkey Solutions** *(just this one)*

Complete solution for an electronic device is simply sum of all services we provide.

Filed # 2 content for: Services *>>* ***Consulting*** *- this field contains the following items*

**Consulting** *(just this one)*

Filed # 3 content for: Services *>>* ***Consulting*** *- this field content when no item is selected within field #2.*

A broad architectural proposal or advice on small technical details on hourly or per job basis. Try our free initial technical discussion offer.

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On TESCNOLOGIES. Direct hit on a link in field\_1 displays content in field\_3. There is no field\_2

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| --- | --- | --- | --- |
| links\_0 | **HOME SERVICES ~~WORKFLOW~~ TECHNOLOGIES ABOUT** | | |
| Filed #0 | Link\_0 >> Link\_1 path  This page shows technology fields in which we operate. If your operations are already in one of those fields, a quick look over the titles will tell you everything about us. But if you need a custom electronic device, but not familiar with the industry, it may help you determine if we could support you. | | |
|  | **Real Time Systems**  **Embedded Platforms**  **General Processing**  **Digital Signal Processing**  **FPGA**  D:\MURINA\VegaEDS\VegaEDS_WebPages\images\embedded_icon_40x40.gifD:\MURINA\VegaEDS\VegaEDS_WebPages\images\processing_icon_40x40.gif  **Algorithm Development**  **High Speed Digital Design**  D:\MURINA\VegaEDS\VegaEDS_WebPages\images\highspeed_icon_40x40.gif  **Designing for Electro Magnetic Compliance**  D:\MURINA\VegaEDS\VegaEDS_WebPages\images\dsp_icon_40x40.gifD:\MURINA\VegaEDS\VegaEDS_WebPages\images\fpga_icon_40x40.gifD:\MURINA\VegaEDS\VegaEDS_WebPages\images\algorithm_icon_40x40.gifD:\MURINA\VegaEDS\VegaEDS_WebPages\images\emc_icon_40x40.gif  **Power Supplies & Power Management**  D:\MURINA\VegaEDS\VegaEDS_WebPages\images\power_icon_40x40.gif  D:\MURINA\VegaEDS\VegaEDS_WebPages\images\rtc_icon_40x40.gif  Filed #1: links\_1 | Field #2: empty (non-existing) | D:\MURINA\VegaEDS\VegaEDS_WebPages\images\ss_hardware_372x254.jpg  We develop electronic circuits to run software applications, run dedicated hardwired algorithms, support mechanical subsystems, provide power or combination of all. Here link to TECHNOLOIGES (tbd).  Field #3: text/graphic content |

Filed # 3 content for: Technologies *>>* ***Real Time Systems*** *- this field content when item is selected within field #1.*

Whenever a system must act upon a stimulus within strict time limits, that system is categorized as "real-time" system. High predictability is the imperative, while performance needs to go only as high as it is needed for the task. A typical example is car airbag; upon accident it must inflate in milliseconds otherwise the whole system is useless. Engineers designing real-time systems must fully understand the environment in which it operates. Beside the necessity, we also enjoy digging into multidisciplinary engineering and science, beyond pure electronics and software.

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Filed # 3 content for: Technologies *>>* ***Embedded Platforms*** *- this field content when item is selected within field #1.*

Embedded platforms, electronic circuits with dedicated functionality. Such platform contains interfaces specific to the system in which it is embedded. Although designed to execute only specific tasks, embedded systems may run very complex software (in this content called firmware), due to the complexity of the task itself. Other than processing, mechanical and environmental integration is the next big thing in this field. More often than not, embedded systems operate in "real-time". We specialized in embedded, real time system development.

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Filed # 3 content for: Technologies *>>* ***General Processing*** *- this field content when item is selected within field #1.*

Any system that requires some control contains a processor. It could be a tiny 8 bit controller with only Kilo-Bytes of memory, or very large application processor or SoC with a number of peripherals for higher integration and Giga-Bytes of external memory of various technologies. The experience with ARM and PowerPC cores is one of the most valuable assets of our group.

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Filed # 3 content for: Technologies *>>* ***Digital Signal Processing*** *- this field content when item is selected within field #1.*

Digital Signal Processors. This kind of processors are designed for computing, rather than connectivity, which is the characteristic of microcontrollers. Complex operations, such as video processing typically run on a DSP (in this particular case all operations must finish before the next frame arrives).

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Filed # 3 content for: Technologies *>>* ***FPGA*** *- this field content when item is selected within field #1.*

Field Programmable Gate Array is an in chip configurable digital circuit. The FPGAs are mainly used to run specific tasks, such as calculations (even faster than DSPs) or to interface to a non-standard circuit. By incorporating FPGA(s), a platform gets a dedicated hardware accelerator or glue logic at reasonable cost. The only thing faster than that is an ASIC (Application Specific Integrated Circuit), but to make any financial sense they must be produced in very large quantities. FPGAs are sometimes used for functional testing of a future ASIC.

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Filed # 3 content for: Technologies *>>* ***Algorithm Development*** *- this field content when item is selected within field #1.*

Although FPGAs and DSPs are powerful devices, the intelligence still comes from people. For great number of standard tasks there are libraries, in form of software and IPs for FPGAs. However, real situations greatly exceed the limits of the libraries. Our involvement into multidisciplinary engineering also includes developing algorithms to make things work.

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Filed # 3 content for: Technologies *>>* ***High Speed Digital Design*** *- this field content when item is selected within field #1.*

The initial purpose of digitizing the world was to eliminate the effects of noise present in analog signals. Digitalization also provides virtually endless processing capability. However, with increasing frequencies at which digital circuits operate, engineers are faced again with "analog effects" on digital signals. Specific skill set is needed to make a reliable high speed digital circuit. When dealing with electronic signals, the world is analog.

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Filed # 3 content for: Technologies *>>* ***Design for Electro Magnetic Compliance*** *- this field content when item is selected within field #1.*

Yet another "analog effect" coming out of digital circuits is the energy emission. It can be in form of radiation (electromagnetic waves) or conducted over direct contact. That energy may affect surrounding equipment to the point of malfunctioning. Electromagnetic Interference (EMI) can never be eliminated, but only brought down to acceptable levels with the risk defined statistically, rather than in absolute terms. Various national and international organizations set standards to which devices must comply in both terms, the amount of allowed radiation and immunity to radiation. The well known are CE-labeling in Europe and FCC compliance in the US.

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Filed # 3 content for: Technologies *>>* ***Power Supplies & Power Management*** *- this field content when item is selected within field #1.*

Designing power supplies is our everyday work as no electronic circuit is without it. Being it a high voltage motor supply, processor core voltages, high efficient power solutions for mobile applications, energy harvesting solutions, we have experience in designing them all

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On ABOUT US. Direct hit on a link in field\_1 displays content in field\_3. There is no field\_2

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| --- | --- | --- | --- |
| links\_0 | **HOME SERVICES ~~WORKFLOW~~ TECHNOLOGIES ABOUT** | | |
| Filed #0 | Link\_0 >> Link\_1 path | | |
|  | **About Us**  **Code of Conduct**  **Contact**  D:\MURINA\VegaEDS\VegaEDS_WebPages\images\embedded_icon_40x40.gifD:\MURINA\VegaEDS\VegaEDS_WebPages\images\processing_icon_40x40.gif  D:\MURINA\VegaEDS\VegaEDS_WebPages\images\rtc_icon_40x40.gif  Filed #1: links\_1 | Field #2: empty (non-existing) | Field #3: text/graphic content |

Filed # 3 content for: About *>>* ***About Us*** *- this field content when item is selected within field #1.*

We mastered our skills in several North American and European companies. They include start-up companies, midsize businesses, large corporations, versatile industries and technologies, all with their own venues. Today, we incorporate the best of practices we have seen, being it the enthusiasm of a start-up, or procedural discipline required within large organizations.

With the need of proper development practices along with cost reduction, engineering force is split between Canada and East Europe, Toronto and Belgrade.

We serve customers across the globe, traveling where the work leads us as needed, if something cannot be done over voice or video conferencing and e-mails.

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Filed # 3 content for: About *>>* ***Code of Business Conduct*** *- this field content when item is selected within field #1.*

Although contracts and non-disclosure agreements are normal practice, we believe more in Good Faith. An idea is the most valuable asset of a company, and almost everything for a start-up venture. We understand and respect that fact by putting confidentiality at the top of our conduct practices. Stay assured that all relevant data will never leave our doors, either in electronic forms, hardcopies or orally, except toward you. We don’t use e-mails to send files back and forth, only secure FTP transfer. After passing source data and materials to you, our copies are deleted from servers and local computers.

Minimizing financial risks for you and us alike is another aspect of a fair relationship. We try to be realistic and deliver on agreed schedule, and expect payments on agreed schedule. Yes, there may be circumstances beyond anybody's control, but with reasonable approach by all involved, they can be easily. Progress report is sent to you as you want, weekly, bi-weekly, monthly. It is also beneficial to all to share information related to the product, technical, financial, changes in schedule, all with the goal of having the work properly done, and on schedule.

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Filed # 3 content for: About *>>* ***Contact Us*** *- this field content when item is selected within field #1.*

Contact info:

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Belgrade: 011-406-1726; 062-871-8832

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