

Advanced Logic Synthesis for Electronics  
The ASIC-FPGA Design Experts

**A.L.S.E.**

## **Company Presentation**

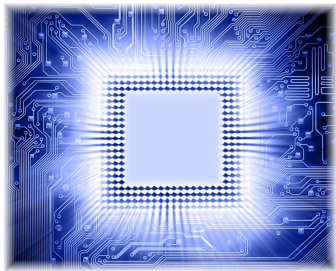
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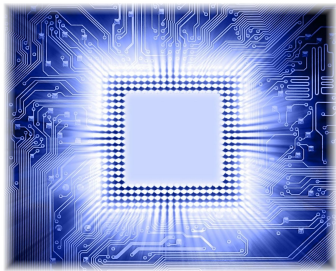
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# Agenda

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- A.L.S.E – Company Profile
- Services & IPs
- Altera / ALSE Training Courses in Europe
- HDL Training Courses
- Hardware Platforms
- Custom Hardware Design
- Company Charter



# Company Profile

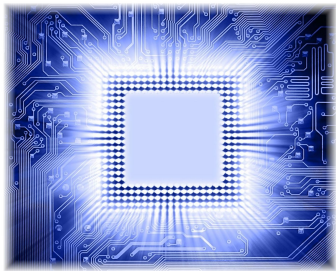
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A.L.S.E in 2016

23 years old company

8 engineers today

R & D located in Paris + Grenoble (France),  
offers a complete range of Services and IPs  
to help customers with their Digital Projects.



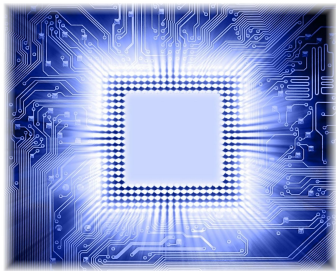
# Services

## **Design Services** (active Altera DSN member)

- ▶ Turn-Key CPLD & FPGA Designs
- ▶ Intellectual Property (“IPs”)
- ▶ Design of Complete solutions including System and Board Level Design
- ▶ Design of custom complex Blocks, Cores or Sub-systems
- ▶ Audits & Expertise, Failure / Malfunction analysis, Methodology advising
- ▶ Obsolescence mitigation & ASIC to FPGA conversion
- ▶ We design all kinds of FPGAs (Altera, Actel, Lattice, Xilinx...)

## **Training Services**

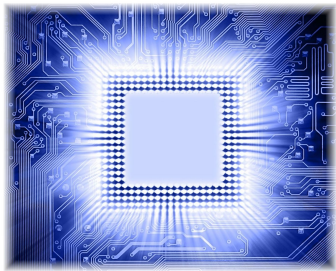
- ▶ A.L.S.E is the **Altera** Training Center for France & parts of Europe
- ▶ A.L.S.E delivers the **Doulos** UK HDL Training courses in France  
VHDL, Verilog, SystemVerilog, UVM, SystemC, PSL, Tcl/Tk, Digital Design, Assertion-Based Verification, etc...
- ▶ **A.L.S.E** designs & delivers **custom FPGA Design trainings** (Fr, USA, Japan, UK)



# ALSE-Altera Training Courses



- **Designing Altera FPGAs using Quartus II** (now 2 + 3 days)  
Extremely dense & intensive Essential (2 days) + Expert (3 days) courses.  
Include a lot of hands-on practice (15 exercises !) & teaches also fundamental concepts (like STA). Very strong emphasis on TimeQuest. Note that no HDL is taught.
- **System On Chip SoC-FPGA** (4 days)  
This is a must for engineers willing to adopt Altera's FPGA SoC technology.
  - \* FPGA System design using Qsys
  - \* ARM SoC FPGA Hardware design
  - \* ARM SoC FPGA Software design
  - \* Embedded Linux – Altera SoC distribution
- **SoPC Nios II** (modular, 5 days)  
There still is demand for this modular training.
- **Embedded Linux Kernel & Driver programming** (5 days) - **NEW**  
To master the Linux Kernel and how to design Drivers.  
All labs performed on a SoC-FPGA kit.
- **Designing with External Memories** (2 days)  
Teaches how modern memories work and how to use them efficiently in FPGA projects.  
Covers: SRAM, SSRam, PSRam, SDram, DDR, DDRII, DDR3, QDR, Flash, Serial Flash... Pitfalls, SDC constraints, Pin assignment, Signal Integrity, Altera real-time debugging tools...

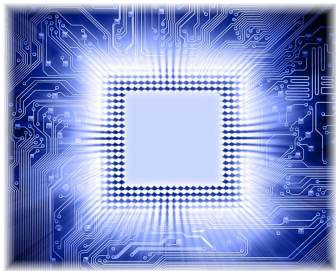


# HDL Training Courses

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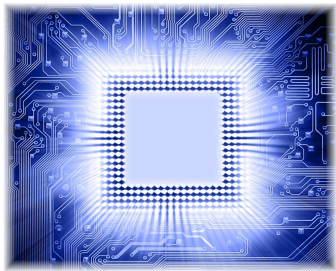
- **EDDT** : Essential Digital Design Techniques
- **VHDL**, VHDL for FPGA, Expert VHDL
- **Verilog**, Expert Verilog
- **SystemVerilog** for VHDL Designers, SystemVerilog for Verification, Verification Methodologies (incl. **UVM**)
- **SystemC**, TLM 2.0
- **PSL**
- **Tcl/Tk**
- **ARM** training courses :  
including **ARM Cortex A9** MPCORE (HPS - SOC FPGAs)



# Custom Training Courses

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- Based on complete FPGA Methodology, originally developed for an International Company, and delivered world-wide.
- Customizable to any context.
- Focused on customer's exact needs, background, experience and applications.
- Addresses specific concerns (examples : Specific FPGA family, High temperature design, Reliability, Signal Processing, Legacy devices, Obsolescence mitigation, Certification concerns...)
- Delivers the most optimized learning experience.
- Available on-site even for very small teams (3+).
- Can be used for Know-How transfer.

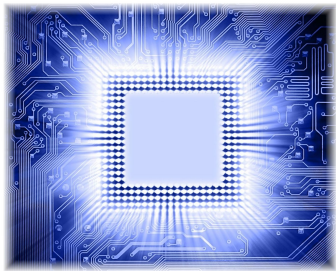


# Intellectual properties

## Off The Shelf IPs

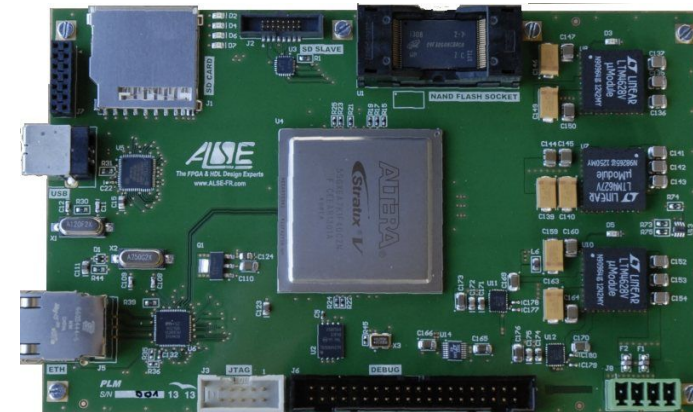
- ▶ **New Ultra Low Latency Industrial Ethernet network !**
- ▶ **New 10G Ethernet !** Upgrade of our popular Gigabit GEDEK to 10G
- ▶ **New wavelet Codec !** High compression, high quality, real-time, compact...
- ▶ **New Video Interfaces : HDMI in + HDMI out ...**
- ▶ **New Hardware Lossless Compression compatible with “GZIP” !**
- ▶ **(Gigabit) Ethernet :** Plug & Ping with GEDEK, our best-seller !  
Many options like Remote Flash Programming, Remote Ethernet Master Port...
- ▶ **PCIexpress :** strong know-how, advanced SGDMA solution + ALSE Software drivers. We also support the “Best In Class PCIe” Altera solution.
- ▶ **High Performance Video** processing blocks (Debayer, Gaussian & Median Filters, Interpolating Rescalers, Rate conversion, Uniformity & Contrast enhancement, Color space conversion, Alpha blender, De-interlacing, NTSC/PAL, BT656, DVI & HDMI, Full-HD blocks and OSD...).
- ▶ **JPEG Encoder & Decoder:** High Perf + compacts, Still or Streaming
- ▶ **Memory Controllers** (Hi-Perf Quad-SPI ctr + **New** NAND Flash w BCH ECC)
- ▶ **Digital Audio + “Simple” IP blocks** (like I2C, SPI, UART, Arinc429, etc)
- ▶ Etc...

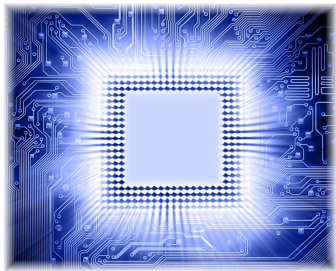




# Custom Hardware Design

- ▶ Activity started 7 years ago, very successful (HPBB + SigmaDelta Analog Acquisition Board + ASIC Emulator + 1588 Extension + AVDB + HPAPB etc)
- ▶ On-demand design, from simple systems to extremely complex
- ▶ Quick turn around time
- ▶ Extreme competence in complex PCBs
- ▶ Solid manufacturing & testing partners
- ▶ Expertise in Analog and Mixed front ends
- ▶ Expertise in Ultra High Temperature (> 200°C)
- ▶ Signal Integrity Management
- ▶ High Speed Measurements / Qualification
- ▶ Hardware Reviews
- ▶ Partnership with ReFlex CES



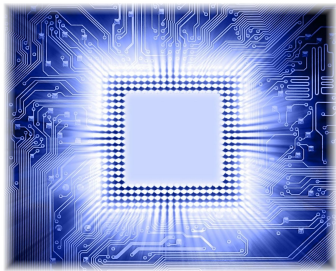


# High Performance Base Boards

## Customer Off The Shelf HPBB series

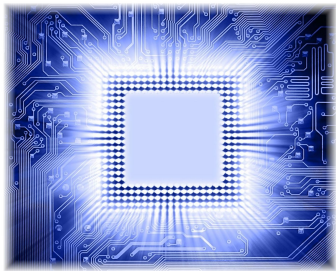
- ▶ Largest existing FPGA for Hardware DSP : Stratix IV GX 230
- ▶ Huge external Memory Bandwidth: 2 x DDR3 chips + DDR3 SODIMM
- ▶ FMC connector for High Speed Mezzanine cards, including DAC & ADC boards tested up to 1 Giga samples / sec.
- ▶ Huge I/O Bandwidth: PCIe + 1 x QSFP + 2 x SFP+, and 4 x SATA2
- ▶ Industrial board (rackable), 16 layers PCB, 2 variants available
- ▶ Complete **FrameWork** with Ethernet communication & Control (HIL) !
- ▶ Stratix V 28nm version available (see next pages)





# ALSE's HPAPB

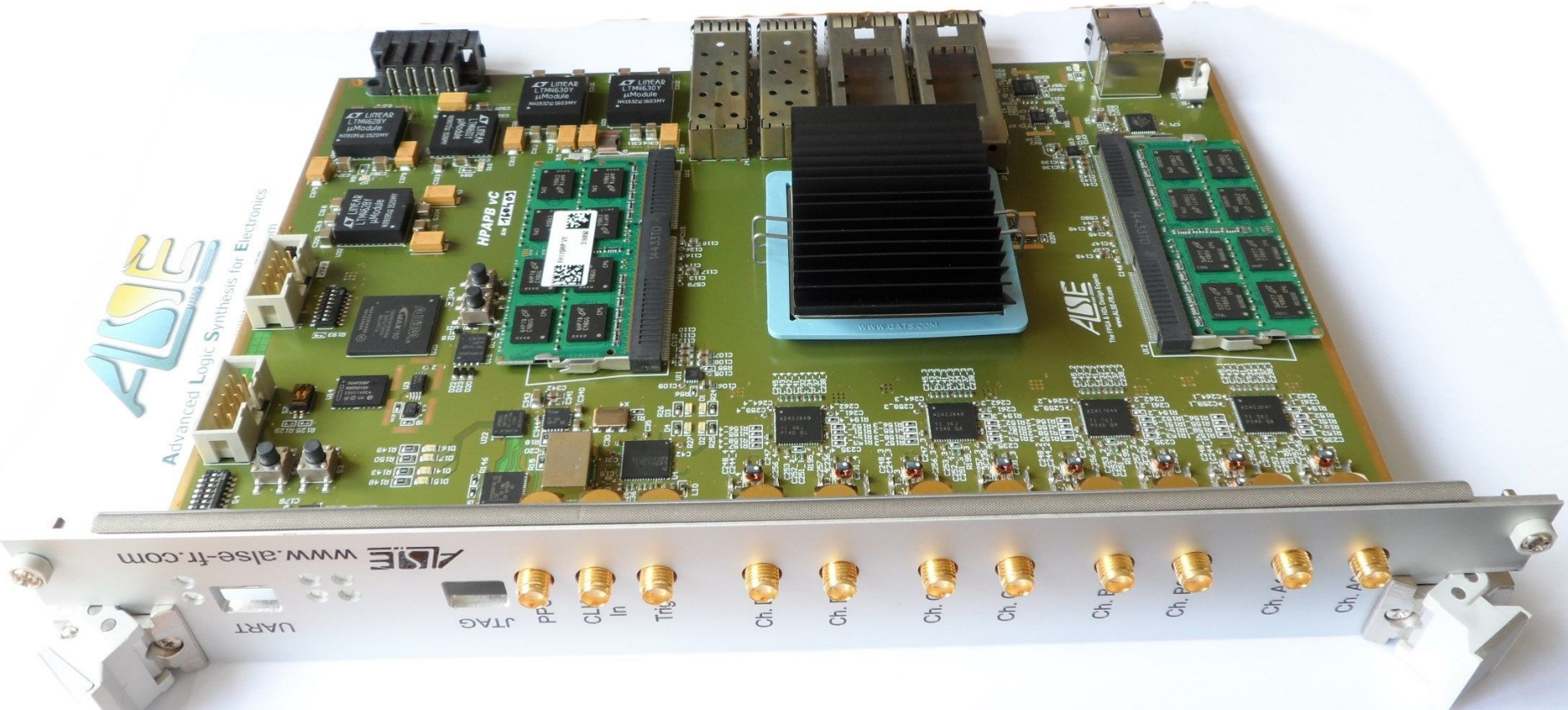
- High Performance Acquisition and Processing Board
- Based on Largest Stratix V device
- 4 x On-board latest Ti ADCs – 8 channels - JESD204B
- 2 x 16 Gbytes SODIMM
- Application example : receives and processes in real time 96 antennas (192 channels) in an array of HPAPB boards connected in a double ring with 2 x 40 Gigabits interboards links (for real time correlation)
- Provides unprecedented performance with multiple synthetic aperture, beam-forming and sub-band analysis.
- 10 GB Ethernet (10G GEDEK IP available)
- 2 x 40 GB ring network
- Embedded USB Blaster II & Max10, remote Ethernet Flash update

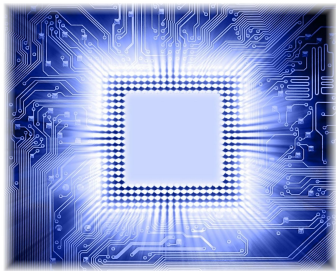


# ALSE's HPAPB



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# AVDB

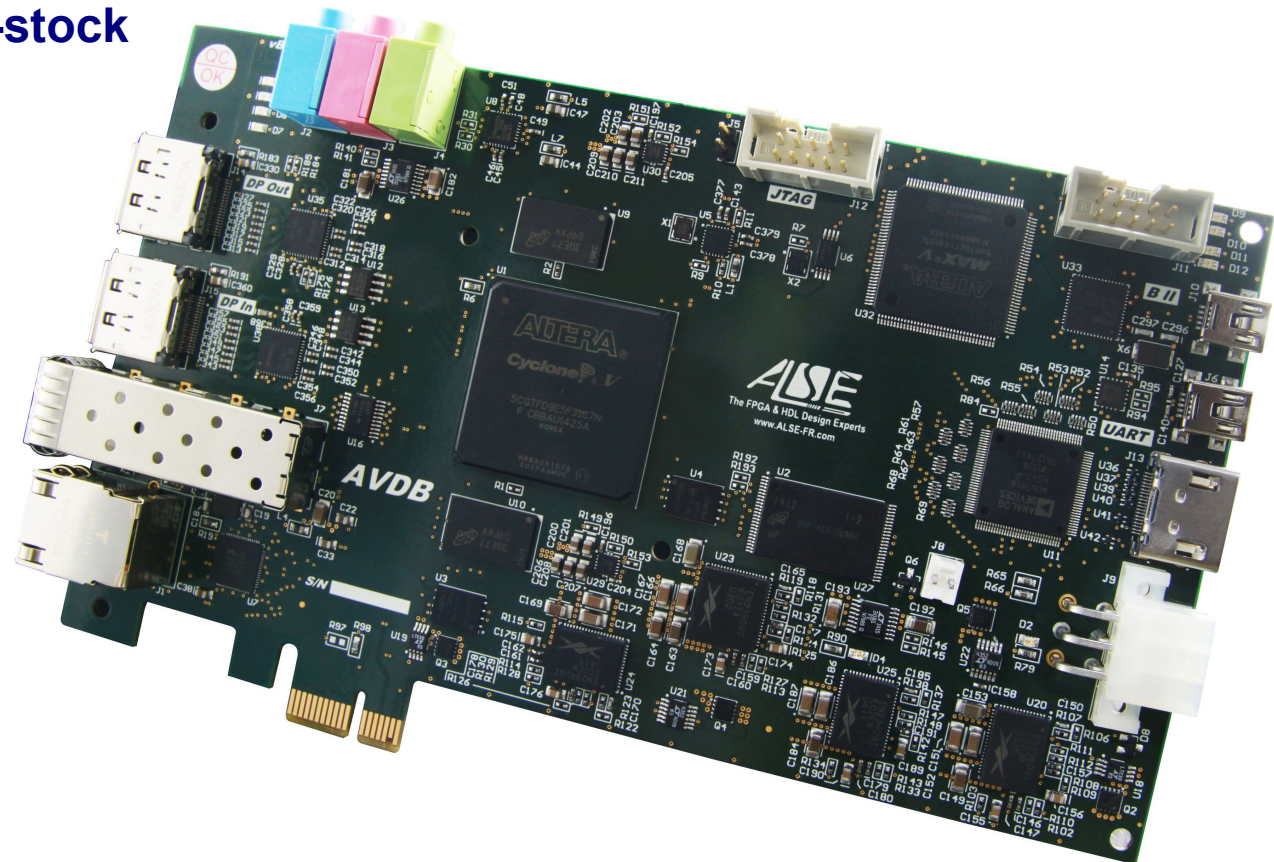


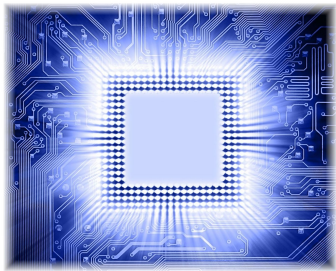
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## Advanced Video Development Board

- ▶ Dedicated for Video Processing and Streaming.
- ▶ Uses the largest low cost 28n FPGA : Cyclone V GT
- ▶ HDMI, Display port, 3G-SDI, GB Ethernet, PCI-Express etc
- ▶ **Available today, on-stock**



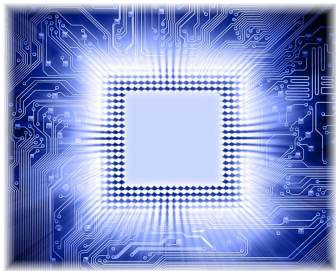


# (Design) Win - Win

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## ALSE can help you ...

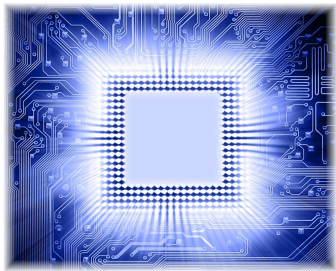
# Create Better Designs, Faster



# Win - Win Partner

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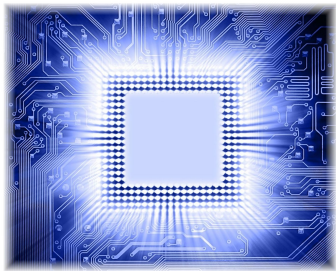
- We have acquired & developed **know-how**, **expertise**, and **innovative IPs** in key fields, currently in high demands.
- We have a **100% success** rate, in a very large field of applications !
- We can master all the pieces of a project from PCB to complex FPGA & processing, and SW drivers.
- We **share** our know-how !
- We offer very **reactive** before and after-sales **service**.
- We believe in and deliver affordable IPs for FPGAs but :
  - We do not give away our Technology.
  - We do not want to be involved when we do not bring added value and when there is no budget.
  - We welcome tough challenges and “impossible” missions !



# Some Hot IPs

- **Ethernet !** → **now 10G**  
With GEDEK, we have a UNIQUE and unsurpassed solution (still after 7+ years !), and we beat all other alternatives on : Performance, Area, Versatility, Simplicity, & Cost of integration.
- **NEW Streaming Generic (gzip) Compression & Decompression**
- **NEW wavelet Video CoDecs**, Ultra High Quality & High Compression
- **Memory Controllers**. Hot: **Quad-SPI** (with extra features for Altera)!  
Hot : **NAND Flash** controller with **BCH ECC**
- **PCI-Express**. We have ultimate performance solutions to exploit the Altera Hard-IPs. Including our own drivers.
- **JPEG** Coder/Decoder for *Still images and Video Streaming* !  
Great demos available (HD over fraction of 100M Eth BW).  
And indeed **VIDEO processing blocks** & solutions.
- **Industrial networks** : **Ultra-low Latency GbE ring + Powerlink**





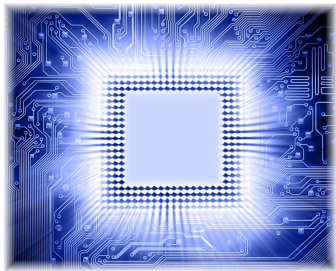
# Keys to success

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*We focus on the Design's success, not on selling a piece !*

- Affordable IPs & solutions.
- Support during integration + Longer term support
- Know-How transmission  
(ALSE is a *Partner*, not just a provider)
- Ability to take care of some or all of the Hardware Design
- Ability to provide Education, Support and Services
- Agility & Velocity
- Commercial Model (customer typically pays only when the design is delivered and working).
- Price & Delay are guaranteed up front.

*It's easy to work with ALSE*

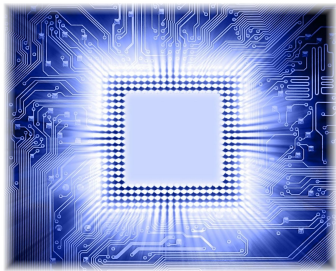


# Company Charter

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## *Serving the Electronic Design Community*

- Develop Technical Excellence and Leadership
  - Respect Ethics and Protect Customers' interest
  - Offer affordable IPs and Services
  - Share ALSE's Know-How & Expertise
  - Provide 1<sup>st</sup> Class Technical Support
  - 100% success rate, on-time and on-budget delivery
- 23+ years of continued success & customer satisfaction.



Thank you !

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