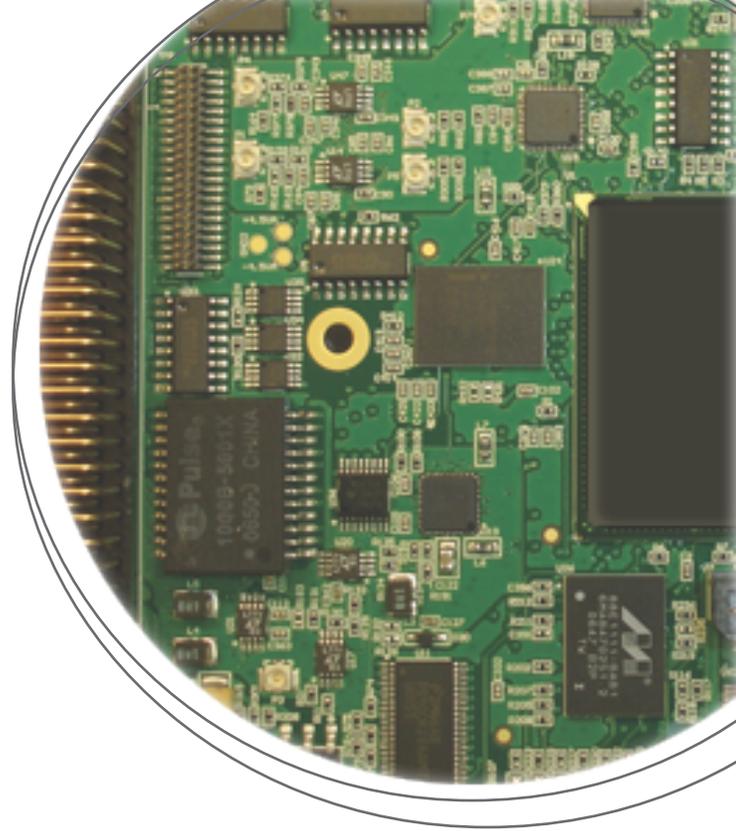




**Digital Design Corporation**

## **Design Services**

*Chip Design  
Board Design  
System Design  
Software Design*



## **Product Consulting**

*Custom Design  
Small Form Factor  
Low SWaP  
Algorithm Acceleration*



## **Innovative Products**

*Video/Data Recording  
Advanced Network Products  
Video/Image Processing*

## **Industries Served**

*Automotive  
Military & Aerospace  
Industrial  
Medical  
Other*

# SERVICES



## Chip Design

DDC has extensive experience designing complex systems and chips. DDC has world-class experts on all main technologies including, FPGA, ASIC, and SoC. DDC is generally on the cutting edge, using modern techniques and technologies to achieve the highest quality while completing very complex designs or very tight low power small-footprint designs.

## Board Design

DDC has designed countless boards, ranging in complexity from 28 layer large circuit cards employing large numbers of multi-gigabit links with the highest level of performance, to very small highly dense powerful, portable computing platforms for sophisticated video/image processing and communications in low power environments. DDC also performs board design, schematic capture, layout, thermal modeling, power design, and design for manufacturability.

## Software Design

DDC has a wide breath of software development talent and experience. DDC ultimately culminates its experience in the most advanced applications and highest levels of integration. DDC specializes in drivers, embedded controls, networking, video/image processing, DSP, applications, GUIs, test code, and many operating systems, including: Windows, Linux, Vx-Works, RTOS, and custom.

## System Design

DDC is expert at concept-to-production, and everything associated, including system-architecting, board design, chip design, software design, mechanical design, reverse engineering, modeling, algorithm development, project management, production management, testing, certification, etc..

## Manufacturing

DDC is has a proven, well documented prototype and production process and controls, is ISO-9001 certified, has a sourcing department, and has extensive ties to reps and distributors and vendors. DDC can provide initial prototypes, and subsequent low to mid volume production, as well as production assistance, design-for-test, production test software and test rigs, and can oversee delivering quality product to you.

# PRODUCTS

## High Bandwidth Video/Data Recording Products & Solutions



## Advanced Network Products & Solutions

DDC has an extensive network appliance portfolio and experience in developing solutions that flow large amounts of information through a network, including video, audio, wireless, high bandwidth, low-latency, etc.. We understand network interfaces, most major protocols and stacks, traffic management, and have developed countless solutions for various applications. Make your appliance a web appliance with DDC's extensive offerings.

The DDC Video and Advanced Data Recorders (VAADR) provide real-time recording of high frame rate or high bandwidth 16 bit hi or low – resolution imagery, in rugged applications, or in the lab or other industrial settings. There are many models. It can record RAW or compressed imagery and associated meta-data (GPS, timestamp, IRIG codes, vehicular info, etc.). It is a compact rugged recorder line that is extensively used in airborne and vehicular applications. DDC also has an extensive debrief console and groundstation for instant access to your video, including image processing, data extraction, and video conversion.

## Intellectual Property

### Graphics Overlay

- Full frame overlay
- Open GL (multi-plane)
- Sprite based
- Alpha-blending

### Sensor/Optics corrections

- Non-uniformity correction (NUC)
- Bad pixel replacement (BPR)
- Distortion correction

### Color processing

- Color conversions: YUV, RGB, YCC, Bayer
- Contrast / brightness / gamma
- Color correction, white balance
- FCT (Favorite Color Transform)

### Noise filters

- Spatial (3x3, 7x7), LPF, HPF, etc.
- Temporal (motion adaptive)
- De-interlace filtering (motion adaptive)

### AGC

- Histogram equalization
- AACE / LAP (local area processing)
- Dynamic gamma

### Camera interfacing

- Raw sensors / FPA
- CCD/FLIR, LVDS
- HOTlink, Cameralink, NTSC/PAL, RS-170

### Scaling

- Translate / rotate / zoom (TRZ)
- Display scaling / variable aspect ratio
- Picture in picture (PIP)
- Warp

### Advanced Processing

- Image stabilization
- LAP (local area processing)
- Stereo vision / ranging
- Optical Flow
- Multi-target tracking
- Super-resolution
- Motion detection / tracking
- 2-D correlation
- Fusion (CCD/FLIR, multi-spectral)
- Super fast FFT/IFFT
- Mosaicing / stitching

### Interface related

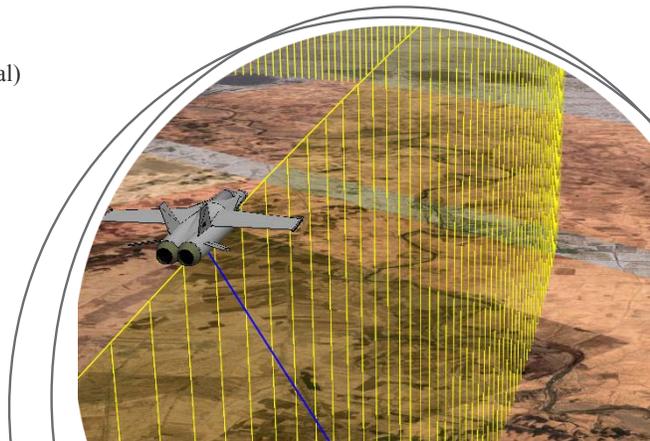
- 1553 interface
- VME64 interface
- Frame buffers: SDRAM/DDR/DDR2
- A/D and D/A config through I2C
- Peripheral interface options: CAN2.0, I2C
- I2S, Ethernet, USB, J1850, 1553B
- Bus interfaces: EMIF, PCI, ISA, VME, OPB
- Multibus, PLB, AMBA, Avalon, and others.

### Codecs

- Low latency MJPEG codec
- Low latency MPEG2 codec
- Low latency MPEG4/h.264 encoder
- MP3 decoder
- Various audio/speech codecs



Digital Design Corporation





# Why DDC is uniquely qualified to work with you!

## Who we are

Digital Design Corporation is a craftsman organization committed to providing best-in-class craftsman digital design services and products for many industries. We architect, design, implement chips, associated circuits and software and the systems which encompass them.

## What We Do

**Consulting:** We will bid whole projects, whole chips or will just be members of a project team. We specialize in image/video enhancement, recording, transport, communications, networking, and embedded controls.

**Products:** We design and develop custom electronic products for ourselves and for others, in the fields of security, video and image enhancement, video recording and all sorts of advanced imaging applications, communications, networking, and embedded controls. We also offer a wide variety of intellectual properties in these fields which can be incorporated into and enhance our customers' product designs. We have our own line of ruggedized video/data recording platforms and hardware accelerated image processing platforms and network appliance products.

## Experience

We have expert knowledge in implementing the technologies listed above and also in SoCs, ASICs, FPGAs, PLDs, driver software, microcode, embedded processors, etc., in SoC/ASIC/FPGA/board design flows, EDA tools and in dealing with ASIC foundries and back end processes. With half of our 40 engineers having advanced degrees, average experience over 20 years and over 12 years of operation, we are committed to the creation of high quality digital circuits, products and software.

**We have extensive chip design experience:** Having designed complex systems and chips for over 17 years, we have a breadth of experience from which to draw from. We are world-class experts on all main technologies: ASIC, FPGA, and SoC. Our experience in these technologies is unparalleled. We are typically at the cutting edge of technology, using the latest technologies and techniques to achieve high quality in completing the most complex designs.

**We have extensive experience in system design:** We have designed whole systems, boards, chips, and software for a range of complex (and simple) automotive products. Although most of the really high-end complexity ends up in the chips, we have a proven track record in everything between requirements definition of the overall system, to testing the final product. We have an experienced staff that has expert knowledge in system design, board design, chip design, and software design, and the documentation and testing of such products.

**We are efficient and cost effective:** In addition to being excellent designers, we are accurate estimators and are on schedule. Having done this for so long, we are very predictable and reliable. This makes us efficient and cost effective, time and time again.

**Every one of our previous customers is a reference:** We have been designing chips and systems for 12+ years. In that time, we have proven our abilities over and over again. We use all of our previous customers as a reference, and we will be looking to add each new customer to that list.

**We have a world-class talent pool:** We have advanced degrees in DSP, communications, and video. Most employees are 10-20 year veterans, and have been with us a long time. We have countless working customer products in the field.

**We have good relationships with chip and tool vendors:** Relationships take time to develop. Having done this for so long and working with so many processes, chip vendors, and EDA tools, we have nurtured and maintained solid relationships, which allow us to provide the highest quality services and products to our customers.

**We use the latest tools, software, and equipment:** We keep up to date to provide the fastest and highest quality design cycles.



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