

# Custom design services



**BARCO**

Visibly yours



## Your partner for electronic design services and solutions

Barco Silex, Barco's center of competence for micro-electronic design, has established a solid reputation in the development of custom solutions for a variety of application areas, including multimedia, surveillance, security, remote sensing, aerospace, communication and industrial and consumer electronics.

Starting from your requirements, we provide all services needed to complement your own skills. We are fully skilled to design, prototype, manufacture, test, support and market a full range of custom solutions and services for a broad range of advanced applications.

From the very beginning, we have developed strong relationships with carefully selected, technology-driven suppliers, to provide you with the most advanced and suitable technologies and services. That is exactly why our products and services are valued by industry-leading OEMs and professionals worldwide.

# Market-leading know-how

Over the years, Barco has gathered wide-ranging experience and know-how through the development of high-performance display technology and custom OEM products.

## Unique expertise

Our dedicated engineering teams have gained a unique expertise in the field of ASIC/FPGA design, Intellectual Property (IP) design and integration, advanced component and board design, embedded software, DSP and RTOS based systems and system development. Continued, focused investments in research and development and strategic partnerships with high-end technology partners allow us to present the most advanced and high-end design solutions to the market.

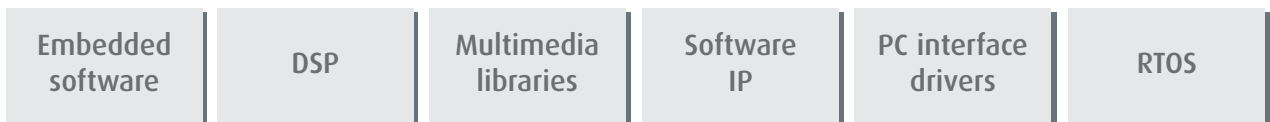
## Wide-ranging competences

Whatever your project requires, our broad range of outstanding competences and services holds the answer. Focussing on your specific needs (performance, speed, power, flexibility, volume...), we can provide you with the optimal cost-effective component, platform or system design.

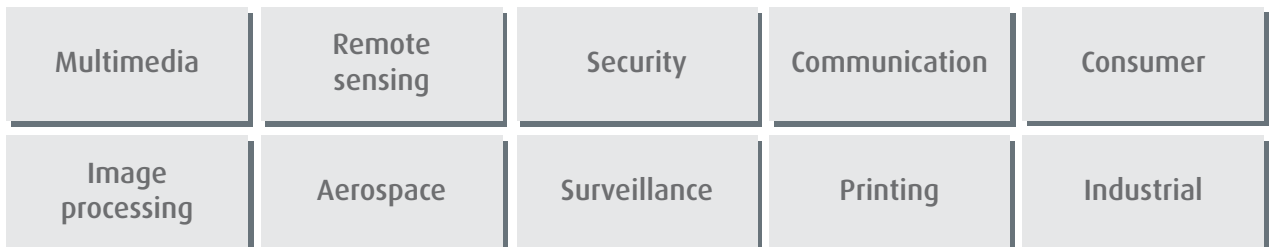
- **Hardware design**

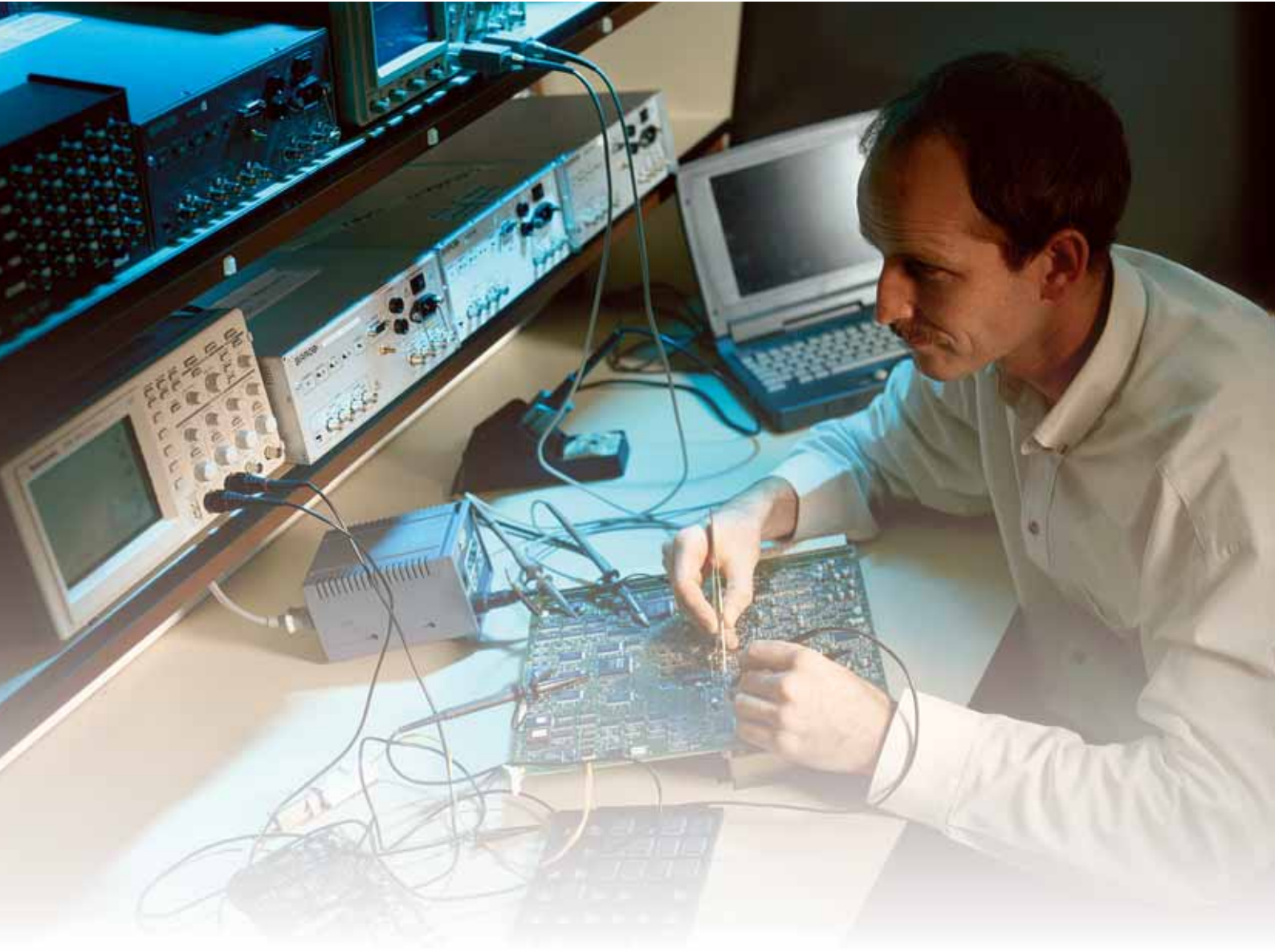


- **Software design**



- **Long-standing expertise in various application areas**





## A full line of first-rate services

We can bring all services required to complement your skills and optimize your time-to-market. From component to full system design, our dedicated engineers are fully skilled to provide you with a state-of-the-art solution, tailored to your requirements.

Our design know-how ranges from system level architecture to state-of-the-art soft- and hardware design and manufacturing. We have a long-standing expertise in ASIC/GA/FPGA conversion design services, allowing you to optimize performance and extend the lifetime of your system.

### What can Barco do for you?

- IP design
- Image and video processing
- Hardware design
- Software and firmware development
- Board design
- Product design
- System design
- Maintenance support

## • IP design

---

Based on many years' experience in state-of-the-art electronic design, our experts have developed a full portfolio of IP products, including interfacing, memory control, image processing and encryption functions.

Our IP cores are fully validated and hardware proven, guaranteeing optimum IP quality support during your integration phase. As a result, we can offer optimized solutions, combining maximum performance and reliability with minimum cost of ownership.

### What can Barco do for you?

- Interface design (PCI, IDE, USB, IrDa,...)
- Memory controllers (DDR, SDRAM, Flash,...)
- Forward error coding (RS, Viterbi,...)
- Encryption, decryption (AES, DES,...)
- Image and video compression IP

## • Image and video processing

---

Our engineers have acquired worldwide expertise in advanced image and video processing applications such as digital motion pictures, surveillance, aerospace, printing, industrial and customer electronics.

A unique combination of high-end competences in image and video coding and custom design services are your guarantee for an optimum and dedicated video processing implementation.

### What can Barco do for you?

- Image processing (rotation, scan rate conversions, filtering,...)
- Image and video coding (JPEG, JPEG-LS, JBIG, JPEG2000, MPEG-2, MPEG-4, H.264, MP3)

### Requirements

- Throughput
- Latency
- Scalability
- Motion estimation
- Robustness
- Power dissipation
- Rad-tolerance
- Cost
- Volume

### Barco custom design services



### Solutions

JPEG / JPEG-LS / JPEG 2000 /  
JBIG / MPEG-2 / MPEG-4 /  
H.264 /MP3

IP / ASIC / FPGA / SoC /  
DSP / RTOS / Board

## • Hardware design

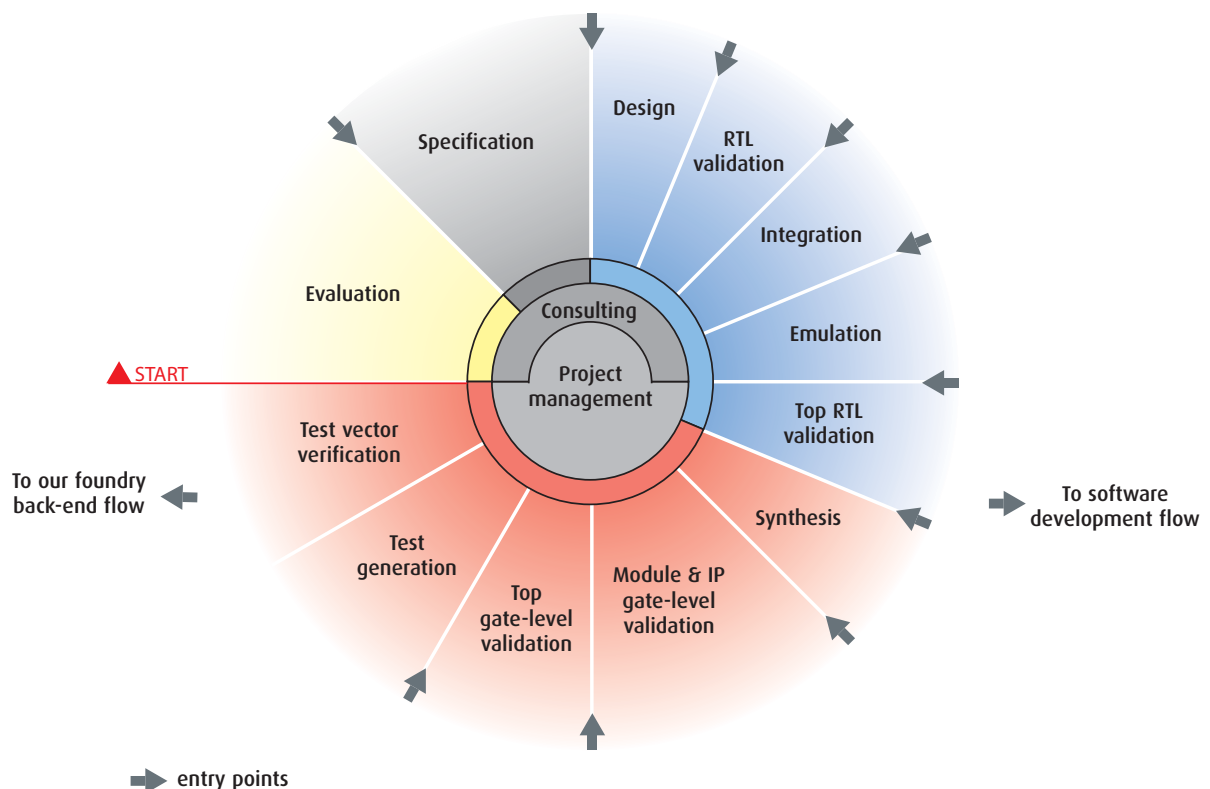
Our portfolio of digital and mixed-signal design holds ASIC, GA, structured ASIC and FPGA design, advanced SoC/SoPC based system design and board development. Furthermore, we have gained extensive expertise in vendor library conversion, obsolete device replacement and technology porting.

Our extensive expertise covers all aspects of hardware design. From component level to full system development, Barco has all key capabilities to offer first-rate electronics, tailored to your needs.

Every step in the design process is documented following a strict scheme of enrolment. Thanks to a flexible yet thorough project and design methodology, customer interaction is possible at different stages in the development cycle.

### What can Barco do for you?

- Digital and mixed-signal design
- Custom ASIC (Application Specific Integrated Circuit) design
- GA (Gate Array) design
- Structured ASIC design
- FPGA (Field-Programmable Gate Array) design
- SoC (Systems on Chips) design
- PSoC (Programmable Systems on Chips) design
- Analog and digital board design
- Conversion services between ASIC / Gate Array / FPGA
- Technology porting
- Specification
- RTL design (VHDL, Verilog)
- Synthesis from your RTL code
- Netlist conversion
- Functional verification, simulation
- Testability analysis, test synthesis and test vector generation
- Development of emulation platforms
- Foundry interface including layout, mask production, prototyping, production



## • Software and firmware development

---

Our engineering teams have developed a complete suite of embedded software and firmware applications for various applications such as video processing, security,... Thanks to this integrated approach, end users can benefit from a perfect balance and trade-off between their hardware based functionalities, embedded software, device drivers, libraries and user applications.

### What can Barco do for you?

- **Embedded processor design and integration (ARM, AMBA, Nios, MicroBlaze,...)**
- **Low-level software, device drivers**
- **Assembler, C, C++**
- **Optimized multimedia DSP programming**
- **Embedded processors and software in FPGA technology**
- **RTOS (pSOS, Linux ...)**
- **Firmware development**

## A methodological approach

To provide you with the most reliable and highest standard designs, we have set up a design methodology, based on a set of stringent rules and recommendations. This methodological approach guarantees you that our designs show consistent rigor and quality.

Thanks to this, we have built up a solid reputation in the aerospace industry and we have been selected by the market leaders for design projects with DO-254 as design assurance guideline. DO-254 was developed by the avionics industry to establish hardware design guidelines for developers when hardware is deployed in aircraft equipment designs.

### What can Barco do for you?

- **Safety critical project designs**
- **DO-254 design services**



## • Board design

---

We provide state-of-the-art printed circuit board designs for a multitude of applications. Based on our expertise, we understand your system requirements and can match our solutions to your specific system needs. High-grade support services include long-term board maintenance, re-engineering of out-of-date products and inventive replacement of obsolete components.



### What can Barco do for you?

- Analog and digital board design
- Custom form factor, PCI, VME,... design
- Embedded processing and software in FPGA technology

## • System design

---

Based on state-of-the-art components and the latest electrical, optical and mechanical technologies, we offer OEMs all skills to design and produce end products and systems in very short periods of time. Every project is carried out with a maximum of flexibility and inventiveness.



### What can Barco do for you?

- Stand-alone product and system design
- Integration of products into a system or rack
- Ergonomic/industrial design

## • Manufacturing services

---

We present a full manufacturing service, ranging from procurement of components to final assembled products. Depending on your needs, we can purchase, produce and distribute, in order to provide a complete answer to your outsourcing expectations. Our flexible production facilities can handle small to mid-size series as well as prototypes and full production runs.



### What can Barco do for you?

- Multi-layer PCB manufacturing and assembly
- Tropicalization
- Stand-alone product manufacturing
- Product staging
- Testing
- Mechanical assembly
- Prototyping, small and mid-size series
- Production runs
- Surface treatment, painting
- Packaging design

## • Maintenance support - End-of-life management

---

In today's modality business, end-of-life management is becoming more and more important, as many technology suppliers are accelerating the migration of their products to more advanced technologies. Therefore, we support our customers with our extensive experience in providing long-term maintenance support and high-grade end-of-life management for their solutions.

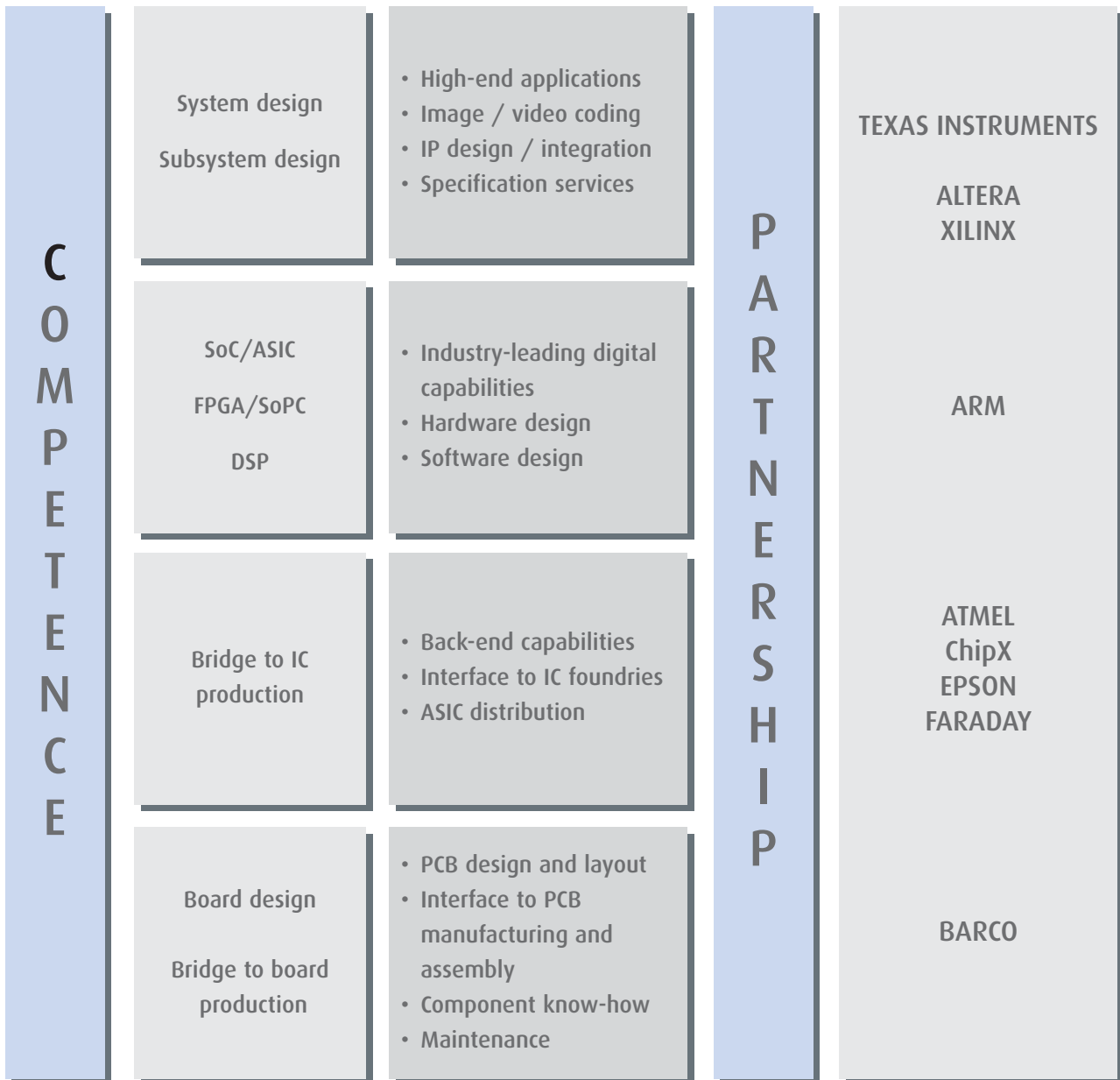


### What can Barco do for you?

- Maintenance support
- Repair
- Procurement of compatible solutions
- Obsolete component redesign
- End-of-life management

# Service overview

Barco covers the entire process of a hardware design, from component design to system development, and offers high-end board design services with an interface to production.



# A customer-driven partnership approach

To provide our customers with the most advanced and suitable technologies, we have developed strong relationships with carefully selected, technology driven partners.

- **ARM Approved Design Centre program**

Barco Silex is an ARM approved design centre. This status is only awarded to design houses that have been assessed, trained and equipped with the latest ARM technology and after a detailed, rigorous audit.

The ARM program provides Barco with the resources, tools, training and experience required to implement quality ARM core-based SoC designs.



- **ASIC partners**

We can interface with any foundry, but have close foundry partnerships with key suppliers like ATMEL, ChipX, EPSON, and FARADAY. Due to this, we have access to a wide range of technologies and libraries. We can provide the interface, back-end capabilities, IP integration and ASIC distribution.



- **FPGA partners**

Thanks to our strong relationship with programmable logic partners like ALTERA and XILINX, we are a single point of contact for customers and designers who are looking to integrate system building blocks, including processors, memory, IP, and their own customized logic into a single programmable platform. Technical information and design methodologies are forwarded directly to our design teams.



- **ALTERA Certified Design Centre (CDC)**

Being a CDC member, Barco Silex is recognized by ALTERA as a world leading System-on-Chip expert with strong application knowledge and successful track records in multimillion gate design.



- **XILINX AllianceCORE™ and XPERTS Program member**

As approved XILINX partnership program member, we can provide our customers with high-quality IP and services to complete large system-level designs.



- **TI Third Party Network member**

As a member company, we provide TMS320™ DSP-related services to help customers accelerate their efforts and cut time-to-market.



# Barco electronic design services

A recognized technology leader with many years of experience in all areas of display technology, Barco has established a solid reputation with high-grade design services and solutions for a variety of applications. A unique merger of extensive in-house experience and high-standing competences makes Barco the leading choice for custom imaging projects. From idea to production, Barco offers its customers all services required to complement their own skills.

Barco's expertise is supported by a worldwide network of research, development and support services. A global sales organization, with regional support people who understand your language and requirements, complements Barco's partnership approach.

**Barco Silex N.V.**

Scientific Park  
Rue du Bosquet 7 - B-1348 Louvain-la-Neuve  
Belgium  
Phone: +32 10 454 904  
Fax: +32 10 454 636  
E-mail: [barco-silex@barco.com](mailto:barco-silex@barco.com)

**Barco Silex S.A.**

ZI Rousset-Peynier, Immeuble C.C.E.  
Route de Trets - F-13790 Peynier  
France  
Phone: +33 4 4216 4106  
Fax: +33 4 4216 4101



In search of continuous improvement

Ref. S-P-CUS-0208

Technical specifications are subject to change without prior notice

[www.barcodesignservices.com](http://www.barcodesignservices.com)

