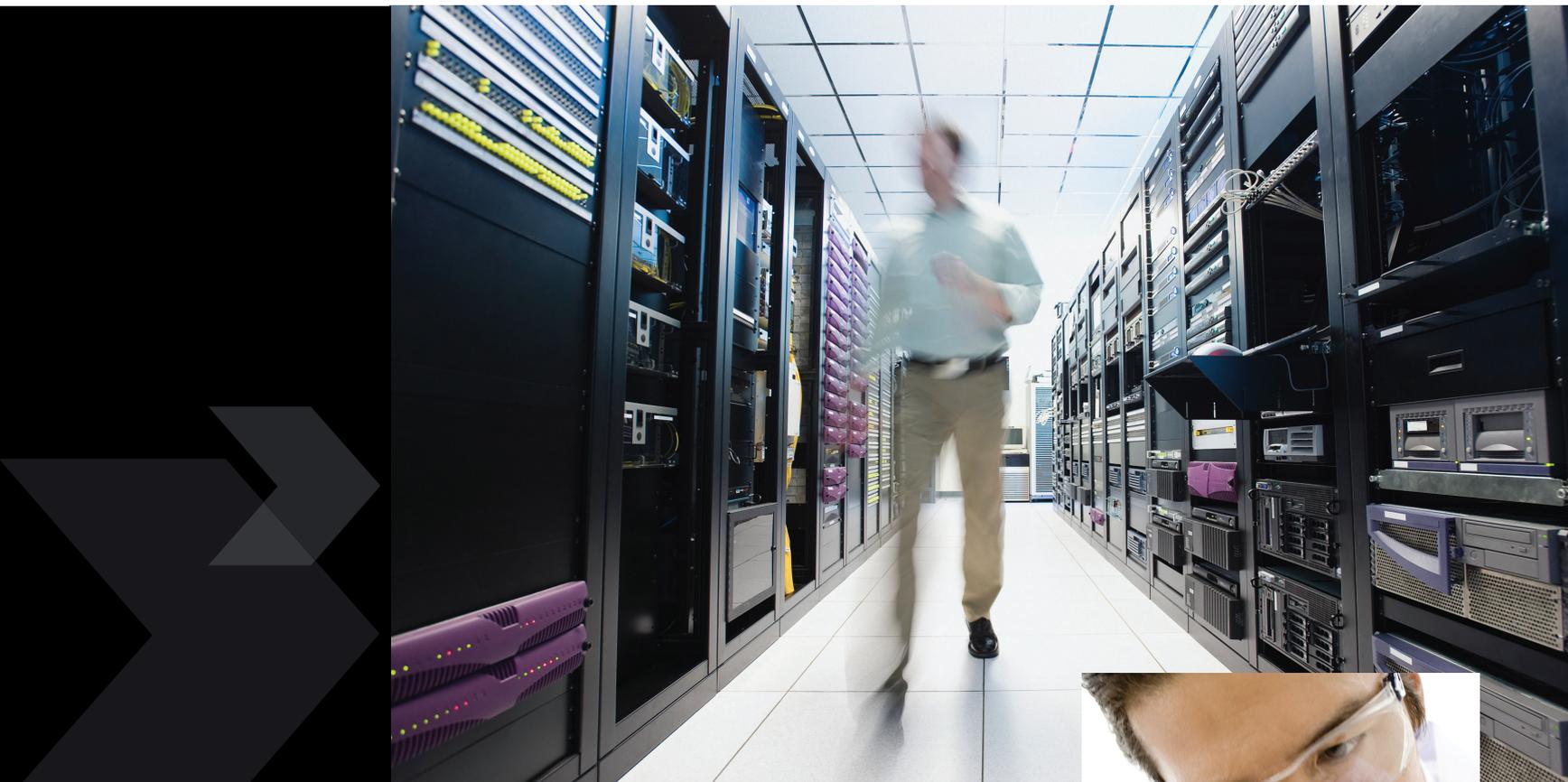


# Accelerating Quality



## Xilinx 2010 Quality Report



COMPLETE  
SOLUTIONS



ZERO  
DEFECTS



CONTINUOUS  
IMPROVEMENT



QUALITY  
ECOSYSTEM



HIGHER  
STANDARDS

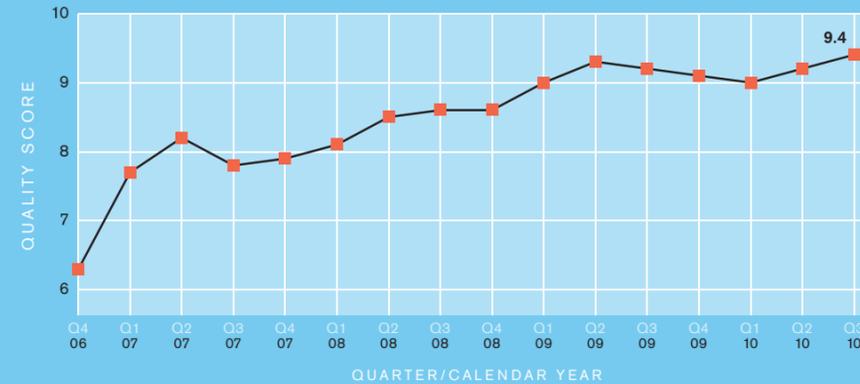
 **XILINX**<sup>®</sup>

**ABOUT OUR COVER:**

THE COVER DESIGN REPRESENTS THE FAST-MOVING, HIGHLY COMPETITIVE WORLD OF TECHNOLOGY-BASED INNOVATIONS. THE ICONS SYMBOLIZE FOUNDATIONAL VALUES OF THE XILINX APPROACH TO QUALITY, WHICH PUTS DESIGNERS ON AN ACCELERATED PATH FOR PRODUCING SYSTEMS CHARACTERIZED BY INDUSTRY-LEADING QUALITY.



INCREASING CUSTOMER SATISFACTION



QUALITY AWARDS

- CISCO**  
SUPPLIER OF THE YEAR AWARD
- HUAWEI**  
QUALITY EXCELLENCE AWARD  
EXCELLENT CORE PARTNER AWARD  
SUPPLIER OF THE YEAR AWARD
- ANRITSU**  
TOP SUPPLIER AWARD
- BROCADE**  
QUALITY EXCELLENCE AWARD
- GENERAL DYNAMICS**  
STRATEGIC SUPPLIER AWARD
- TELLABS**  
SUPPLIER OF THE YEAR AWARD

for more information, visit:  
[www.xilinx.com/company/about](http://www.xilinx.com/company/about)

Accelerating Quality

➤ At Xilinx, the challenges faced by the design engineer shape our agenda for driving improvements into our business. Our measure of success is our customer's success. The numbers and awards above attest to the effectiveness of this strategy.

Regardless of the target market, design engineers face common challenges: to create solutions that stand out from the competition, control development costs, adapt to changing standards, and reduce time to market. Xilinx quality addresses all of these challenges — to accelerate design projects and let engineers get better results, faster.

When a designer chooses a Xilinx platform, the project is instantly in motion. Xilinx quality programs transfer momentum to our customers, making their jobs easier. As you will see within the pages of this report, Xilinx quality benefits a multitude of markets by accelerating:

**Development:** In the field of communications, designers are called upon to deliver greater performance and more reliable infrastructure. Xilinx high-quality FPGAs are at the heart of next-generation systems.

**Differentiation:** Standing apart from competitors in the ever-changing consumer products market requires rapid access to the latest technology. Working with Xilinx, engineers can leverage product introduction processes with proven quality results.

**Transformations:** Large-scale industrial applications require robust designs. Xilinx FPGA solutions with proven quality records in other markets can increase ROI and extend the life cycle of a design that transforms manufacturing.

**Innovations:** Customer expectations have never been higher in the automotive market. Xilinx delivers industry-leading FPGAs through a relentless dedication to quality, to unleash designer creativity and exceed those expectations.

**Breakthroughs:** Successful aerospace exploration and breaking traditional limits demand strong partnerships and visionary new approaches, often testing the limits of technology. Xilinx provides the trusted quality foundation, allowing our customers to reach these new frontiers.



COMPLETE SOLUTIONS



ZERO DEFECTS



CONTINUOUS IMPROVEMENT



QUALITY ECOSYSTEM



HIGHER STANDARDS

2010 represents the end of perhaps the most challenging decade for the technology industry. Elevating quality is more important than ever, and has been proven to be a catalyst for market gains. Take advantage of the information provided to begin accelerating quality in your design workflow and the advanced electronic systems you produce. We look forward to hearing from you. And we look forward to discovering new ways to accelerate quality and ultimately improve your project results.

  
Moshe Gavrielov  
President & CEO  
Xilinx, Inc.

  
Vincent Tong  
Senior Vice President, Quality & New Product Introductions  
Xilinx, Inc.  
Board of Directors, Global Semiconductor Alliance

## ACCELERATING DEVELOPMENT

Smartphones and the explosion of digital content are taxing infrastructures worldwide. Engineers must keep up with rapidly evolving interface standards, build in more infrastructure bandwidth, and meet carrier class quality standards for operation. Communications system designers have embraced the inherent flexibility of FPGAs for developing critical data paths, putting Xilinx quality and reliability at the heart of next-generation optical transport networks (OTNs) and “IP everywhere” networks.



## COMMUNICATIONS

### Future-Proofing Networks with Xilinx FPGAs

- Customer satisfaction 9.4 out of 10
- 5 products in volume at zero ppm
- >99.9% test coverage
- Published 28nm SEU results
- TL9000 certification since 2003

### Enriching Development

The unique Xilinx Targeted Design Platform model has yielded domain-specific tools and a more integrated development experience for designers of complex communications systems. Developers are able to thoroughly vet designs and achieve higher-quality results while accelerating innovations by building on a foundation of proven products.

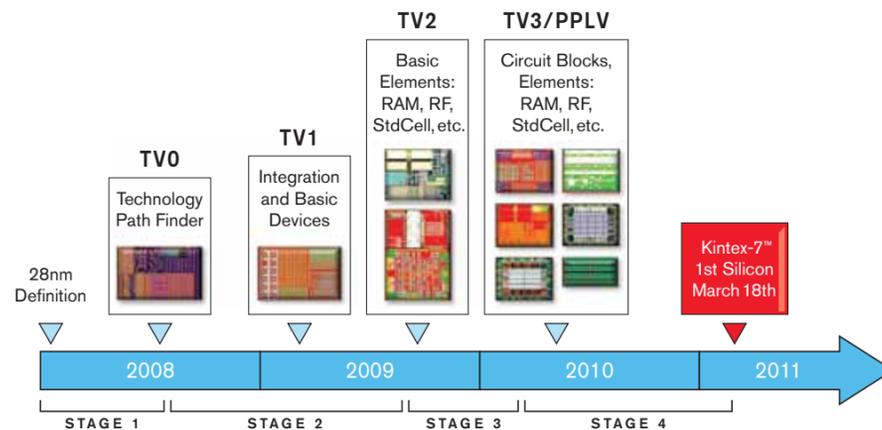
### Speeding Access to Industry Advances

In support of its extensive communications portfolio, Xilinx continues to strengthen strategic partnerships with providers of IP that meets the highest-possible standards of quality. The Xilinx relationships and collaborative approach to quality management give equipment and infrastructure designers rapid access to new technologies while ensuring long product life and support from an established ecosystem.

### Zero Defects: Exceeding Quality Expectations

Aiming for zero defects, Xilinx has continuously improved new product evaluation (NPE) and new product introduction (NPI) processes. In 2010, tighter verifications and fabrication process development milestone criteria have enabled lower power, higher performance, and faster time to market, while enhanced verification and characterization have led to earlier discovery of critical issues.

### LEARNING BEFORE FIRST SILICON FOR HIGH-QUALITY, FASTER TIME TO MARKET



To accelerate process development, Xilinx introduces test chips from the start, as process and performance learning vehicles (PPLVs). Early engagements with world-class partners and years of development drive quality into the technology for Xilinx industry-leading FPGAs.

1 ACCESS

2 INFRASTRUCTURE

3 RADIO CARDS

4 DATACENTERS & ENTERPRISE

5 CHANNEL CARDS

6 BACKHAUL

7 ENABLED TECHNOLOGIES

RECONFIGURABILITY  
FUTURE-PROOFING

SERDES DSP SSI LOW-POWER

“We value our longtime relationship with Xilinx as a preferred supplier and are delighted to acknowledge the company's best-in-class support of the Cisco engineering community all over the world. Service and support have been key differentiators for Xilinx. Xilinx's high-performance, flexible programmable platforms and in-depth knowledge of our technology and market requirements have made it a key contributor to our design teams' success in delivering networking products that transform how people connect, communicate, and collaborate.”

PRENTIS WILSON  
Vice President for Global Supplier Management  
CISCO SYSTEMS INC.

## ACCELERATING DIFFERENTIATION

Constant advancements characterize the consumer electronics industry. Being first to market with reliable, new features in a high quality product translates into larger market share, and therefore determines success or failure. Xilinx helps designers stand out in this fast-moving market, and Xilinx devices dominate many leading-edge products such as 3D TVs. By extending the company's proven quality processes to IP, Xilinx helps designers speed the refinement of high quality algorithms and product features.



### Aiming for Higher Standards

From the outset, Xilinx devices are designed for test, reliability, manufacturing, and the mitigation of single event upset. Proven quality results show that Xilinx excels at meeting stringent requirements for markets where customers demand a steady stream of new features. This is achieved by always striving to improve our products and the quality of our customers' experiences.

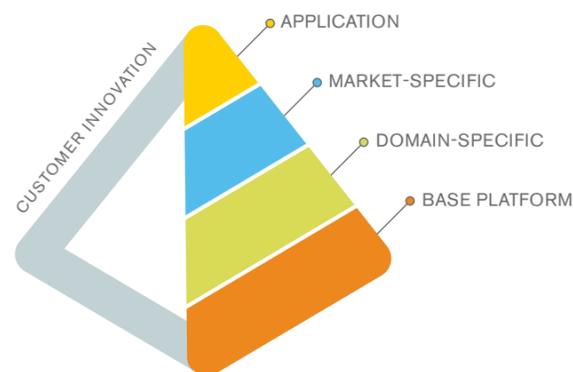
### Continually Improving Product Characterization

Product verification and characterization are increasingly critical in speeding integrated testing to the product datasheet. Xilinx collects more than 200-million characterization data points for each product generation. This process provides key inputs for test development — beginning with holistic simulation and feeding improvements to both software and silicon design.

### Expanding Platforms with Market-Specific IP

To provide designers with world-class development platforms, Xilinx invests in an extensive portfolio of high-quality IP. A framework of process monitors and automated quality checklists ensures repeatability for IP development. With each Xilinx ISE® Design Suite release, regression testing is performed to evaluate the quality and integration of IP. Pass rates and errors are mapped to root causes to facilitate permanent solutions that improve overall quality.

### TARGETED DESIGN PLATFORMS



By freeing designers to focus on differentiation, Targeted Design Platforms speed innovative products to market. The integration of high-quality FPGA devices, design tools, and IP into targeted reference designs creates a robust development and run-time environment.



### CONSUMER

#### Staying in Sync with Consumer Demands

- ISO9001 certification since 1995
- Zero ppm defect reduction program
- Defect density driven quality
- Quarterly reliability reporting
- Lead-free and halogen-free product offerings

- 1 3D HDTV
- 2 HD VIDEO
- 3 E-READER TABLET
- 4 MULTIFUNCTION PRINTER
- 5 SMARTPHONE
- 6 HDTV RECEIVER

XILINX DEVICES ARE IN 90% OF ALL 3D TVs SOLD IN 2010



“Aiptek selected Xilinx Spartan® FPGAs to get to market first with the world's only pocket camcorder that captures 2D and 3D in high definition. Xilinx meets all of our performance, cost, and power requirements, along with the flexibility to support new and evolving video standards. The company's Targeted Design Platform for digital display design is a fast path to low-cost innovation.”

AIPTEK, INC.

## ACCELERATING TRANSFORMATIONS

As manufacturers evolve into globalized operations, increased pressures to control costs and avoid downtime make quality paramount. Xilinx FPGA advancements pioneered in other markets such as automotive, aerospace and defense help commercial and industrial application designers transform traditional industrial designs. Building upon Xilinx quality processes accelerates integration for maximized stability over decades instead of years.



### Recruiting High-Quality IP Partners

To promote the introduction of domain-specific tools, Xilinx shares verification methodologies with its third-party IP partners. Vendor qualification, knowledge transfer, and regular audits and certifications maximize the quality of essential IP to minimize project risk and extend the life span for high-performance interfaces, controllers, and other critical elements on the factory floor.

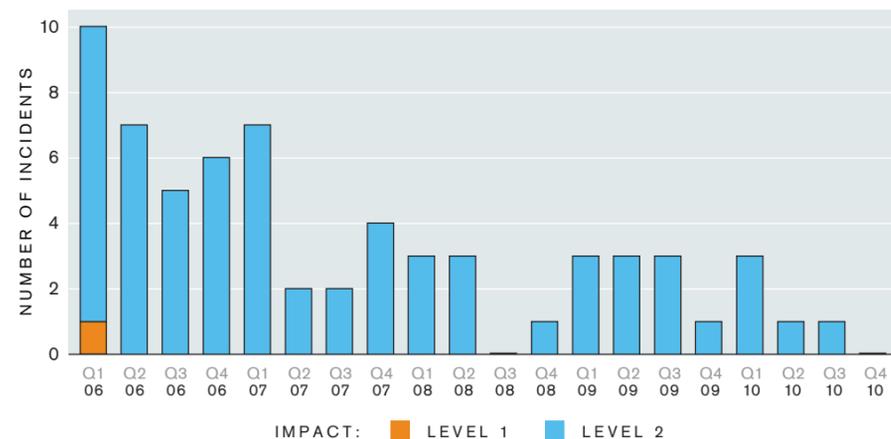
### Extending Quality into the Supply Chain

Xilinx has pioneered fabless manufacturing. We recruit world-class suppliers around the globe for their expertise in building reliable products and their ability to meet tough product quality requirements such as ISO9001, TL9000, TS16949, and S20.20. Building high-quality products requires engineering integration and partnerships to drive controls such as maverick control, statistical bin limiting, and outlier detection.

### Promoting Quality Best Practices

Xilinx actively engages with other industry leaders in strategic associations that help evolve quality requirements and industry standards such as Quest and TL9000. Promoting the adoption of standards and encouraging collaboration raises quality throughout the industry and gives designers more reliable, predictable platforms and solutions for design projects.

### EXCURSION REDUCTION



Solid, reliable, high-quality products require a strong commitment to continuous improvements. At Xilinx, we have worked for a decade to pioneer robust methods that lead to rigorous excursion prevention processes. The results demonstrate this commitment, with no major customer excursions since 2006.

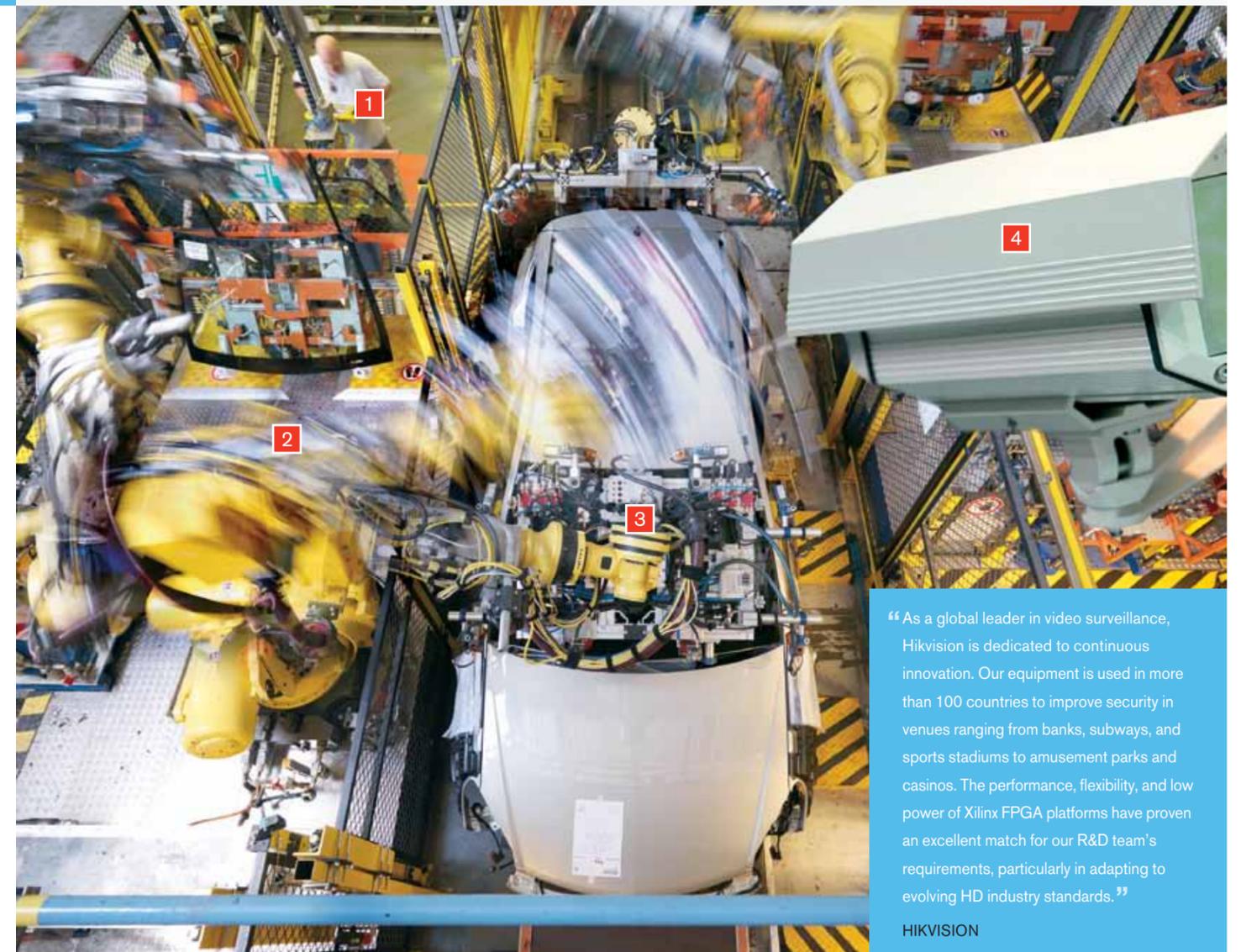
## INDUSTRIAL

### Xilinx Support for Manufacturing Industry Needs

- No material excursions since 2006
- RMAs down 55% vs. 2008
- >440 million data points of characterization collected
- Manufacturing corner material program
- Robust reliability monitoring and FIT rates



- 1 INDUSTRIAL NETWORKING
- 2 MACHINE VISION
- 3 MOTOR CONTROL & PROCESSING
- 4 VIDEO SURVEILLANCE



“As a global leader in video surveillance, Hikvision is dedicated to continuous innovation. Our equipment is used in more than 100 countries to improve security in venues ranging from banks, subways, and sports stadiums to amusement parks and casinos. The performance, flexibility, and low power of Xilinx FPGA platforms have proven an excellent match for our R&D team’s requirements, particularly in adapting to evolving HD industry standards.”

HIKVISION

## ACCELERATING INNOVATION

Technology-oriented digital lifestyles have permanently altered customer expectations in the automotive industry. As a result of its relentless commitment to quality, Xilinx has pioneered processes that elevate quality within every layer of the company's FPGA-based Targeted Design Platforms. High quality platforms put designers on a faster path to innovation, which allows time to build in more functionality while minimizing project risks.



- 1 DRIVER INFORMATION
- 2 DRIVER ASSISTANCE (CAMERA)
- 3 DRIVER ASSISTANCE (RADAR)
- 4 INFOTAINMENT

### AUTOMOTIVE

#### Xilinx Support for Automotive Industry Standards

- TS16949 compliant since 2005
- 2X AEC-Q100 qualification of XA products
- Full XA product BOM controls
- RMA response target < 10 days
- Member of AEC technical committee

#### Advancing Software Quality

Xilinx develops its software in advance of silicon to drive test development and increase overall platform quality. The Xilinx advanced-build methodology, a hallmark of Xilinx software quality, is characterized by rigorous integration metrics that are driving pass rates above 95% across all feature categories. Improvements were introduced in 2010 for feature regressions, performance stability testing, and new family support testing.

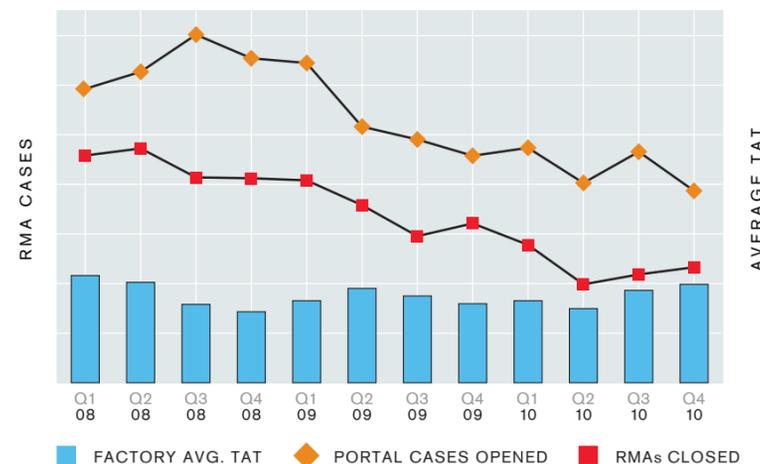
#### Maximizing Adoption

Xilinx FPGA architectures are assessed based on functional blocks and nodes that are more easily tested than traditional ASICs and ASSPs. As a result, every generation of Xilinx devices has achieved greater than 99.9% test coverage. To accelerate these advantages, Xilinx works closely with its partners to drive continuous improvements into every phase of manufacturing using a zero-parts-per-million (zero ppm) approach.

#### Speeding Issue Resolution with Device DNA

For markets that require long-term product life cycles and extended periods of support, Xilinx builds serialization into FPGAs. The "device DNA" points to complete cradle-to-grave history data that gives Xilinx and customer support teams the ability to quickly resolve issues any time during development or after deployment.

#### XILINX QUALITY CUSTOMER RETURNS 2010



Over the last two years, Xilinx has been working with customers to identify root cause and drive changes that lead to quality improvements. By partnering with customers, Xilinx is able to resolve issues surrounding test escapes, manufacturing, and customer application errors. As a result, product returns are down more than 55% over two years. On average, RMA processing takes approximately 15 days from submission to final report.



"For more than a decade, Xilinx has been a trusted supplier of automotive-grade programmable logic devices and solutions for HARMAN's premium infotainment systems. Their commitment to delivering a high level of quality, reliability, and responsiveness has been key to our successful long-term collaboration."

MARKUS UNTERTHINER  
 Director, Supplier Quality Engineering  
 HARMAN Automotive Division

## ACCELERATING BREAKTHROUGHS

Even before the recent economic downturn, the aerospace and defense industry was under pressure to meet dynamic project specifications in less time, with fewer resources, and with shrinking budgets. Two decades as a respected partner in this quality centric industry have given Xilinx great insights, extensive expertise, and leadership capabilities for meeting the most stringent flight, quality, and reliability requirements.



- 1 RUGGEDIZED DEVICES
- 2 AVIONICS SYSTEMS
- 3 SPACE APPLICATIONS
- 4 SECURE COMMUNICATIONS

### AEROSPACE & DEFENSE

#### Xilinx Support for A&D Industry Standards

- QML certification since 1997
- Published Rosetta SEU data
- Most products less than 10 FIT

#### Partnering with Xilinx has resulted in many products achieving zero PPM:

- 100% A&D products
- 99% Automotive products
- 50% Consumer and Industrial products

#### Ruggedizing Devices

Xilinx is the first and only vendor to offer high-density radiation-hardened reconfigurable FPGAs for space applications as part of a broad portfolio of commercial off-the-shelf (COTS) devices. Superb quality, with failure rates of less than one ppm for the XQ device family, is backed by full temperature testing for ruggedized devices. Compatible space-grade, defense-grade, and commercial devices come together within the Xilinx Targeted Design

Platforms to help mission teams control costs and speed development.

#### Aligning Quality

Xilinx's quality approach and metrics have been proven in silicon and extended to hard IP, soft IP, and tools. In each category, methodologies are continually improved in terms of test coverage, traceability of requirements, configuration management, validation of design, verification of test requirements, and rigorous documentation processes.

#### Sharing Process Knowledge

Xilinx shares with customers first-hand manufacturing and design expertise gained during 20 years of focusing on quality. Proven best practices for design checklists, collaborative design reviews, and product qualification techniques empower customer design teams to more rapidly and cost-effectively complete verification and integration.

#### XILINX QUALITY CUSTOMER-REPORTED PPM 2010

Zero PPM Hall of Fame CY2010			
Product	# Fail	# Ship	PPM
Spartan	0	>4M	0
Spartan 3	0	>12M	0
Spartan 3A-DSP	0	>1M	0
Virtex	0	~1M	0
Virtex 2	0	>1M	0
Virtex 6	0	~500K	0

Xilinx has a proven history of quality results, and 2010 is no exception. In addition to these high-volume products, many aerospace, defense, and automotive products achieved zero ppm status. These achievements stemmed from a focus on root cause analysis and preventive action, which protects customers and yields the highest-quality FPGA products.



“Xilinx has provided and continues to provide FPGAs to NASA for use in its SpaceCube reconfigurable on-board processing system. Designed for space applications that demand extreme processing capabilities, SpaceCube is a compact, reconfigurable, multiprocessor computing platform based on Virtex® FPGAs. Currently, next generations with Xilinx FPGAs are under development as the avionics for future missions such as satellite servicing, sophisticated science instrument data processing, CubeSats and a variety of aircraft payload systems.”

NASA GODDARD

## ACCELERATING QUALITY FOR LIFE

Calendar year 2010 included many significant quality results for Xilinx, as summarized in this edition of the Annual Quality Report. Continued adoption of Xilinx technology has increased reliance on FPGAs to levels that demand the absolute best product performance. As more customers embrace targeted design platforms to accelerate their development activities, the quality of each platform element — silicon, software, IP, reference designs, and hardware — underscores the value of integrated solutions. Xilinx quality teams, therefore, are more motivated than ever to apply this proven strategy for providing high-value products.

### Springboarding to the Next Generation

With the launch of the 28nm 7 series platforms, Xilinx continues to drive improvement into its NPE/NPI release process based on generational learning from the previous 40/45nm node. Improvements in all aspects of design, simulation tools, verification methodologies, characterization automation, and advancement in technology such as stacked-silicon interconnect (SSI) have strengthened Xilinx industry leadership.

### A Team Effort

Xilinx has proven with each generation that close partnering with world-class suppliers results in the highest-quality products. These partner relationships, combined with Xilinx engineering expertise and more than 20 years of experience as a fabless semiconductor company, put Xilinx in a unique position to extract value from this supply chain ecosystem and use it to deliver flawless quality to customers.

### Upholding Xilinx Signature Values

Xilinx continues to build on the company's inherent culture and traditions of excellence to accelerate customers' development cycles. It is working—customer feedback indicates that designers are now able to realize the efficiencies gained from high-quality products to realize even more benefits from choosing Xilinx FPGAs combined with related tools and services.

**“As we continue our efforts in 2011, I believe this will be the year of even stronger partnerships that will further accelerate our customers' product innovations.”**

**JACK ELWARD**  
*Vice President, Worldwide Quality Systems and Customer Support*  
 XILINX, INC.

**“In 2010, our close collaboration with Xilinx has led to breakthrough technology advancements, including the industry's first 28nm tapeout, and the world's first multie die FPGA using new stacked-silicon interconnect technology. Our talented technical teams have leveraged TSMC's leadership as the world's leading foundry and Xilinx's leadership in FPGA design and architecture to enable Xilinx to deliver a best-in-class suite of 28nm FPGA platforms in 2011.”**

**DR. SHANG-YI CHIANG**  
*Senior Vice President of R&D*  
 TAIWAN SEMICONDUCTOR  
 MANUFACTURING COMPANY, LIMITED

## DATASHEET COLOR KEY

-  **2010 INNOVATIONS**
-  **XILINX QUALITY**
-  **CASE STUDIES**

**“Xilinx's innovative FPGA technology helps us push the limits.”**

**H. PENNING**  
*Director of Corporate Quality Management*  
 ROHDE & SCHWARZ

### **Corporate Headquarters**

Xilinx, Inc.  
2100 Logic Drive  
San Jose, CA 95124  
USA  
Tel: 408-559-7778  
www.xilinx.com

### **Europe**

Xilinx Europe  
One Logic Drive  
Citywest Business Campus  
Saggart, County Dublin  
Ireland  
Tel: +353-1-464-0311  
www.xilinx.com

### **Japan**

Xilinx K.K.  
Art Village Osaki Central Tower 4F  
1-2-2 Osaki, Shinagawa-ku  
Tokyo 141-0032 Japan  
Tel: +81-3-6744-7777  
japan.xilinx.com

### **Asia Pacific**

Xilinx Asia Pacific Pte. Ltd.  
5 Changi Business Park  
Singapore 486040  
Tel: +65-6407-3000  
www.xilinx.com

**TAKE THE NEXT STEP**  
VISIT US ONLINE AT [WWW.XILINX.COM](http://WWW.XILINX.COM)

For more information about Xilinx and its  
Targeted Design Platform solutions, visit:  
[www.xilinx.com/quality](http://www.xilinx.com/quality)



© Copyright 2011 Xilinx, Inc. XILINX, the Xilinx logo, Virtex, Spartan, ISE and other designated brands included herein are trademarks of Xilinx in the United States and other countries. All other trademarks are the property of their respective owners.

Printed in the U.S.A. PN 2481