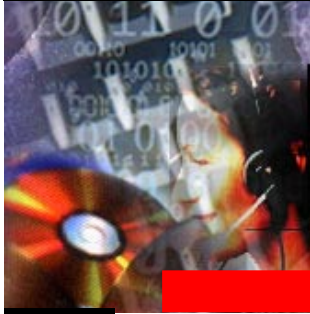


# Quality Engineering



## Software, System Design & Validation

*Design and Validation Techniques to Ensure Total Quality*

IonIdea has acquired specific expertise in providing services for telecom and networking domains. This expertise has been painstakingly cultivated at IonIdea through its own technology initiatives as well as through various development projects undertaken by IonIdea for its worldwide clients. Networking and Datacomm are the primary thrust areas for IonIdea today; it has also been earlier working on switching and network management systems. Today, the expertise from both the switching and network management systems has got embedded into the networking domain. IonIdea has built expertise in networking and routing protocols.

### What we do

- Behavioral Model Development
- Post Silicon Validation
- System validation
- Development on the real time/ embedded systems (VxWorks, pSOS, BSD, EPOC, Etc.) including Development for device drivers,

Board Support Packages.

- Design and implementation of network, protocol and Device Drivers
- Reengineer existing solutions/ stacks from one platform to another
- Feature enhancements of existing platforms and protocol stacks
- Integrate third party stacks/ solutions to new platforms
- Software for the network processors
- Protocol testing, RFC conformance
- Traffic engineering for routers and switches

### Expertise

*Processor Architecture*  
MIPS, x86, PowerPC, ARM  
Intel and Motorola MCU's

*Embedded OS*  
VxWorks, pSOS, Emb-Linux, JavaOS, RT Linux

*I/O Subsystem*  
USB, PCMCIA, Ethernet, xDSL

# Quality Engineering



## ***Software, System Design & Validation***

*Contd...*

*Design and Validation Techniques to Ensure Total Quality*

### *Protocols*

TCP/IP, SNNP. Blue Tooth  
*Application Domains*  
 High Speed Networking  
 Multimedia Applications Services

### **Product Design**

#### *Product Design Capability*

- Product definition
- Architectural design
- Requirement specification definition
- System-level design
- ASIC Design & Validation
- Hardware and software development
- Module integration and testing
- Hardware and software reengineering
- Feature enhancements
- Hardware/software Verification and Validation Continuous engineering support for products

#### **ASIC Design, Verification & Validation**

A comprehensive design flow with start-points at –

- Defined product specs
- Micro-architecture
- RTL coding in progress

IonIdea's ASIC design team has expertise in several phases of ASIC design –

- Architecture
- Derive system level requirements
- Partition the system into hardware and software
- Create data structure document
- Trade-off at micro-architecture levels

With a ready architecture, the RTL team from IonIdea can take over and develop the testbench and design. For test bench, the advanced methodology adopted by IonIdea will create fully self-checking testbenches that will simulate the entire system. Clean partition of software features into firmware related tasks, driver related tasks and device usage related tasks will allow modular growth of testbench that will finally lead a methodical way into hardware/software co-development. The following is the expertise available at IonIdea :

- Implementation
- System level test environment development

# Quality Engineering



## ***Software, System Design & Validation***

*Contd...*

*Design and Validation Techniques to Ensure Total Quality*

- BFM's and simulation models, abstract models
- Protocol checkers, loggers and numerous CAD utilities to stitch the whole environment
- Well planned, feature related testcases to ensure maximum coverage

### **Communication and Networking**

#### Capabilities

#### Product Development

Turnkey communications and networking software solutions.

#### Application Development

Development of customer-specified application software integrated with protocols

#### Stack Management

Integration of network protocol stacks with open or proprietary network and/or element management entities (e.g., SNMP, CMIP/CMISE).

#### Software Integration

Integration of network protocol stack into open or proprietary environments.

#### Customization

Customization of existing software, feature enhancements of existing platforms and protocol stacks optimized to suit your unique needs.

#### Design Consulting

Expertise in the architectural design of advanced Tele communications products.

#### Device Drivers

Development of chip drivers and/or board support packages that work with any on the real-time/ embedded systems (VxWorks, PSOS, EPOC Etc.).

#### Protocol Testing

Protocol testing, RFC conformance, formal verification and validation .

# Quality Engineering



## ***Software, System Design & Validation***

*Contd...*

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*Design and Validation*

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*Techniques to Ensure Total Quality*

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A sample of the verification projects we have undertaken is given below:

- Architectural Verification.
- RTL Verification.
- System Level Verification.
- Host to PCI Bridge.
- RFC Compliance and Reference design implementation

Some of the tool development projects we have undertaken are:

- TCL/C based system validation environment for Networking basics.
- Powerful Performance Evaluation Tools (PET)
- Timing Analyzer - to identify timing violations.
- Protocol Monitor- to monitor protocol violations.
- Bus Monitors - to track all bus activity.