

ABOUT MIRAfra

MiraFra is a global product engineering services company with expertise in semiconductor design, embedded and application software

Founded in 2004, the company has proven expertise in ASIC design from Spec to Silicon and software development end to end. Over the years, MiraFra has established a formidable track record in successfully delivering over hundreds of clients' projects in varied domains across the globe.

Our business philosophy is to achieve excellence in providing design and software services & solutions to our clients to build next generation leadership products

Company Overview:

Our business philosophy is to achieve excellence in providing design and software services & solutions to our clients to build next generation leadership products.

MiraFra is a technology design services company with a high level of expertise in semiconductor design and embedded software development including applications. Founded in 2004, the company has proven expertise in ASIC design from Spec to Silicon and software development end to end.

The company has worldwide presence with it's HQ at Bangalore and design or business centres at Houston, Austin, San Jose, San Diego, New Jersey, Sweden and Singapore.

It has a strong team of semiconductor and software development engineers working with all the major tier1 and tier2 companies in India, USA, Europe and Singapore.

Today, many of our clients are giving testimonials that MiraFra's engineers deployed in execution of various projects are best in class, not only for skills and domain knowledge but also for their understanding of the bigger picture and taking ownership of their work.

Over the years, MiraFra has established a formidable track record in successfully delivering over hundreds of clients' projects in varied domains across the globe.

We have time and again addressed complex technical challenges delivering unique solutions which reflect innovation. The company's success lies in engaging with clients on flexible and tailor-made engagements.

Miraфра's commitment to innovation and efficiency has resulted in the company forging rich and enduring relationships with leading Fortune 500 companies.

Many of Miraфра's clients are engaged as strategic partners for long term business association.

Miraфра is led by an executive team composed of technology leaders, each with decades of experience leading complex projects and large teams.

This team has always focused on hiring the best engineers with degrees from colleges of repute, who have a thirst for learning, and have proven experience delivering consistent quality.

Value Proposition

We value integrity and foster a culture that inspires, motivates everyone to perform at their level best.

At Miraфра, we offer a professional and stimulating work environment that values integrity and a culture that draws on each other's capabilities and experiences to motivate and inspire one another to give of our best as we help clients become high-performance businesses. Our Core Values have shaped the culture and defined the character of our young company, guiding how we function, behave and make decisions.

Employee Fulfillment

Valuing time through right fitment

We take great care to ensure we recruit the right person for the right job. Recruiting right does not end with an offer letter. We nurture and encourage employees to drive their careers forward at MiraFra, ensuring they are working on tasks that best matches their skill sets and experience at all times.

Rewarding and recognizing employees

Our employees are our greatest asset and the primary reason of our success. We recognize, reward, and celebrate their accomplishments.

Career pathing toward growth & fulfilment

We are committed to provide employees with opportunities for personal and professional growth. We encourage investment in continuing education and training, and provide multiple opportunities for professional advancement and empowerment within the company.

Building Workplace to be an extended family

Our workplace is like an extended family, centered around the following values:

Trust: We emphasize integrity in every aspect of our operations. We treat our employees with respect, fairness and integrity at all times and expects the same in return. We must be scrupulously truthful with our clients, our coworkers, and ourselves in our professional and personal actions and work

Work-life balance: We encourage our employees to balance their work and personal responsibilities through various programs. We strive to provide employees with the tools and opportunities necessary to maintain a healthy, balanced lifestyle

Personal support: We seek to provide employees an environment where the company helps them exceed their own expectations. Equally, we want them to feel that they can count on the company to help them deal with personal problems that might adversely impact their work performance, health, and well-being.

Customer Evangelism

Work for Them It works for Us

We exist due to the very existence of our customers. We listen to our customer intently and understand their need and expectations in totality. We build a transparent relation with our customer by committing what we can do and ensure that we keep our commitments. We delight them in delivering more than what is expected from us.

Listen to Them and Lead the Way

Customer satisfaction and loyalty start with listening. Listening to customers and really understanding what they are saying, is critical to build effective solutions that meet their needs.

Work Culture

Code of Ethics

Integrity, honesty, credibility, and reliability are the foundation of who we are at Mirafra. Our Code of Ethics and Core Values are expectations of professional behavior that extends to all employees both in their interactions with one another and with others.

Global Culture

Utilizing global skills and respect cultural diversity

We embrace diversity of people, cultures, races, and religions. We see it as a critical advantage in our quest to become a global leader in our chosen space. We are committed to invest in multi-cultural awareness programs to enhance partnerships and help benefit our customers and employees across different geographies.

Why Mirafra

Why Mirafra Our philosophy is to achieve excellence in providing design and software services & solutions, to help our clients come out with innovative products.

CLIENTS' PERSPECTIVE

Miraфра has a comprehensive portfolio of service offerings in the domain of semiconductor design, embedded product software design and Data analytics. Great expertise in the chosen field and rich experience with many fortune 100 customers. Works with 11 out of top 20 semiconductor companies, several leaders in data communication, Telecommunication, Networking and Automotive domain. Miraфра is well known in the Industry for providing the highest quality of services at reasonable price, bringing “value-for-money” to our customers. Miraфра offers very flexible engagement models, tailored to meet the customer project requirement and support expectations. Miraфра has faster turn-around-time in mobilizing the resources required to meet the customer’s time-to-market expectations of their next generation products. Miraфра has a global presence having offices in India, South East Asia, Europe and USA.

EMPLOYEES’ PERSPECTIVE

Stability of a large company combined with the dynamism and transparency of a start-up. Your contributions will not get lost, at the same time you will have the advantages of a large organization – mature processes, exposure to a large set of customers. Good quality of work. Our customers recognise the quality of our talent and hence we can ensure good quality of work for our engineers. Chance to work with a company that enjoys a strong reputation in the industry for the quality of its engineers. Opportunity to work with the best talent in the industry. Our engineers have degrees from elite colleges like IITs and NITs and have experience from the best companies. Growth opportunities in both technical and management ladders. Long and short term onsite work opportunities in multiple countries across the globe. Periodic performance feedback process for continuous improvement and learning. Regular training programmes in cutting-edge technologies across domains. Regular training programmes in managerial and soft-skills development. Best in industry compensation packages with flexible structure for maximum tax benefits. Work-life balance and flexible timings. A company that is sensitive to the specific needs of each employee. Team outings, get togethers and sporting events on a regular basis. Open door management mantra and progressive culture. Various employee benefits like free medical insurance, free lunch and snacks, car loan option, ample paid leaves, yearly leave encashment option, PF and Gratuity etc.

Management Team

Alok Kuchlous

CEO and Co-Founder

Alok is Chief Executive Officer and one of the founder members of Mirafra. He has extensive experience in developing and deploying verification technologies. He has architected verification tools as well as used state of the art technologies to verify complex chips.

Before starting Mirafra, he was the Director of Engineering at Synopsys, responsible for the VCS-MX and SystemVerilog solutions. Alok joined VCS when it was a 10 person team, and his contributions were instrumental in the VCS revenue growth from 10 million dollars to 120 million dollars. Alok is MS in Computer Engineering from University of Southern California and has a B.Tech in Electrical Engineering from IIT, Delhi.

PV Shyam Sunder Rao

MD and Co-Founder

Shyam is Managing Director and one of the founder members of Mirafra. He has hands on experience of more than a decade in creating and delivering complex verification technologies. Having led many verification projects, he has a deep understanding of verification challenges faced by the leading design teams today.

Before starting Mirafra, Shyam was one of the technical leaders in the Synopsys verification group. His technical leadership helped VCS in creating a differentiation against competition and led to multiple wins at customers. Shyam has a MS and a B.Tech. in Computer Science from University College of Engineering, Osmania University , Hyderabad.

Bimal Bhattacharya

President and Head of Software Group

Bimal is President and Head of Software Engineering Group of Mirafra. He has more than three decades of experience in the embedded system design, development and deployment. He started his career in Bhabha Atomic Research Centre and has worked extensively in design and development of various safety instruments and simulation of process controls loops.

He joined Mirafra in 2012 after working with Nokia where he was leading a global engineering team to work in the areas of advanced security products. Subsequently, in subcontracting sourcing role, he managed the site wide subcontracting requirements by establishing best practices and created a trusted ecosystem. Bimal has a BE in Electrical Engineering from Gauhati University.

Shailesh Jadhav, ACC

Vice President (Human Resources)

Shailesh is Head of HR of Mirafra and has over 16 years of experience and has executed various HR projects involving strategic and operational HR interventions at organisational level. In Mirafra, he is responsible for managing and developing quality talent by way of innovative talent management practices in line with business needs.

He has worked in varied industry domains that comprise IT, Telecom RnD, Aerospace, manufacturing, PPP and Govt sector. He started his career with Indian Army and later worked with Hindalco, ITC Infotech and Canadian Aviation. Before joining Mirafra in 2013, he was associated with Tieto, a Finnish venture. He is an alumnus of XLRI, Jamshedpur.

SERVICES OFFERED

Digital Transformation Services

Overview

Digital Transformation Services division @MiraFra offers quality services in the areas of:

Infrastructure: Cloud engineering, migration, automation Data Engineering: Acquisition, life cycle management, governance & security Analytics: Descriptive, Diagnostic, Predictive, Prescriptive AI/ML: Algorithm development, testing, deployment, ML compiler enhancements & testing Achievements Applied ML techniques in the field of education, Medical applications 10,000 hours of training imparted to workforce Talent acquisition from IITs & Tier 1 product companies Attrition less than 5% per annum Services Big Data Engineering Infrastructural design & implementation Architecture & Design Build Big Data Solutions Data Lake DW/Datamart Cluster Setup – On Prem, Cloud and Hybrid Big Data Applications Data Lifecycle Management Services ETL, Data Pipelines & ELT Data Management – SQL & NO SQL Data Governance Master Data Management Metadata Management Migrations & Upgrades – Applications, Database Cloud – Migration & Onboarding Data Quality & Security Services Big Data Testing Big

Data Security Analytics Services Descriptive analytical services in project management, resource management, utilization etc. Reporting & Visualization services using state of the art reporting tools Web & Marketing Analytical services using state of the art frameworks AI/ML ML applications development Timing closure for Functional/Shift/Capture modes. Development and adaptation of latest concepts like federated learning models Predictive analytical services like quality prediction, forecasting Services in developing apps that employ speech recognition, image recognition, natural language processing Cloud Engineering services Solutions Architecting design & deploy apps that are scalable, highly available, fault tolerant & reliable Select appropriate cloud services to suit the app requirements Migration to cloud platforms DW/Datamart Implementing cost-control strategies Development/Deployment Develop/Deploy/Debug Cloud applications APIs, SDKs, CLI, Lambda programming, etc. Developing serverless applications System Maintenance CI/CD, containerization, etc. deploy and maintain scalable, fault-tolerant systems Manage operating costs Migrate from On-Prem to Cloud or vice versa Competitions OpenKBP – 2020 AAPM Grand Challenge: Rank: 21 (out of 249 participants) Topic: Prediction of clinical quality dose distribution <https://competitions.codalab.org/competitions/23428#results> The Challenge Competitors will predict a clinical quality dose distribution for a patient given only a contoured CT image. The challenge is divided into two streams: The 3D Stream where full 3D dose distributions are evaluated. The Dose-Volume Histogram (DVH) Stream where only DVH metrics are evaluated ISBI 2019: Rank: 15 (out of 150 participants) Classification of Normal vs Malignant Cells in B-ALL White Blood Cancer Microscopic Image https://competitions.codalab.org/competitions/20395#learn_the_details Projects in ML Recommendation Engine: Story recommendation for kids (www.storyweaver.org.in) HR Analytics: Resume matching to requirement Semiconductor Design & Manufacturing: Failure rate prediction for wafer design HR Analytics: Banking and Finance: Credit default risk (assessment of risk of loan default) Wine Industry: Wine quality prediction based on sensory data Chatbots: For Airline reservation system Data security in ML: Federated learning to protect personal data

Publications

IEEE Indicon 2020 Finals: Automatic Extraction of Segments from Resumes using Machine Learning (Automatic Extraction of segments) IEEE Indicon 2019: Machine Learning Based System for Automatic Detection of Leukemia Cancer Cell (ML Based Sys for Auto Det of Leukemia) ICBAI-2019: An Automatic System for Grouping Resumes Based on Skillset Using Topic Clustering Model (Marking Instance of Nuclei) IEEE ICECCT-2019: Computer Aided System for Automatic Detection and Marking Instance of Nuclei (Grouping Resumes based on skillsets) ICBAI-2018:

Computer Aided System for Automatic Retinal Disease Classification and Region Marking for Affected Areas Using Pixel Level Clustering (Automatic Retinal Disease Classification)

Enterprise Application Software

We develop web and mobile applications (including backend), port in-premise software to SaaS environment, develop mobile apps to access legacy software. We have expertise on both native (iOS and Android) and cross platform development tools (like Titanium appcelerator, Sencha touch, Kony etc.)

ENTERPRISE APPLICATION SOFTWARE

Enterprise application world is rapidly moving towards SaaS. Main driver for this is the ease in accessing enterprise data from various devices while on move, mainly from smartphones along with laptop/computers. This market is growing at more than 15% CAGR (through 2018) according to various market research agencies. This is leading to different challenges in Integrating and managing such applications and related devices. Mobile enterprise application development platforms have come up to manage diversity of devices and software platforms and to manage deployment challenges along with ease and speed of development and ease of maintenance. At the same time, native mobile applications are putting up a stiff challenge as they are much more efficient both in performance and in footprint.

Services in mobile application development: Mirafra provides complete end to end solutions in development, maintenance and testing of enterprises applications. This includes mobile application design, development and deployment for various native platforms like iOS, Android and using different cross platform tools like Titanium Appcelerator, Sencha Touch, Kony etc.

Mobile application development technology:

- Mobile OS Platforms (Android, iOS, Windows and BlackBerry)
- UI / UX designs for Tablet / SmartPhone Devices (various form factors and hardware capability)
- Hybrid app development – Port the existing website into responsive mobile website / app.
- Wireless Technology (Wifi, LTE and other evolving technologies)
- Managing the devices (BYOD / COPE) and deployment of applications into stores
- Implementation of Enterprise data Security solutions on Mobile

Cloud Enabling Services Mirafra has expertise in migrating on-premise software to various cloud platforms (like Azure, AWS, Google platform etc.) right from providing the consultancy in identifying the right cloud platform to develop/migrate, deploy and maintain such solutions.

Cloud Computing Considerations

The AWS verification team at Mirafra has the skill sets required to execute on:

- Security and compliance
- Upgrade without disruption of services
- Easy scalability
- Thin client based access
- Defined API set
- Multi-tenancy architecture

CASE STUDIES

CASE STUDIES To portray our enormous industry experience in this area, here are few case studies. To know more, feel free to contact us. Experience the joy of cruise in mobile, New realm of children's stories

Embedded Software

Optimizing for footprint, power dissipation, performance, latency for platforms based on Linux, Android, RTOS, WinCE, proprietary OS etc. EMBEDDED SOFTWARE Mirafra technologies has been providing end to end services ranging from product conceptualization to conformance testing. Mirafra technologies works in all the areas of embedded software development i.e. Board bringup and BSP, Device Drivers, Protocols, Middleware, Applications on variety of Operating systems and Devices. Data-com Telecom Connectivity Automotive Storage Networking/Datacom services Explosive growth of data consumptions due to Smartphones and e-commerce is putting tremendous stress on the existing data networking infrastructure. Massive data consumption will continue to grow with the expansion of IoT, need for real time business analytics and more streaming of content. With the widespread acceptance of cloud infrastructure, software defined network is rapidly growing. With this, global virtual router market is expected to see dramatic growth (>100% in next one year) Services Mirafra is partnering with world leaders in this segment to provide right from board bringup, diagnostics software to router, virtualizations, enabling IPv6 for their top class wired and wireless products. Telecom Services As the number of embedded devices that require mobile connectivity grows, telecommunications companies will be looking for opportunities to increase revenue through their core businesses such as network connectivity, sale of network equipment and devices, all of which this emerging ecosystem will require, as well as through new products and services that are enabled by these core businesses. For telecom companies looking to expand, we expect to see a continued increase in alliances and partnerships which can help bring a variety of requisite capabilities, speed, and time-to-market. "Cumulative \$1 trillion to be spent on telecom and datacom equipment and software over next 5 years"- Infonetics Research (July 2014) Services Mirafra provides end to end consulting services to customer which includes stack development, testing of the handset equipment and network nodes, cross platform migration of protocols, drivers and application, development and maintenance of 3G/ 4G nodes. Mirafra team have excellent hands on experience in

protocol development and testing of 2G, 3G, CDMA and LTE stack. Connectivity Services “We believe that today only 1 percent of what can be connected in the world is actually connected. As an industry, it took us about 20 years to connect 1 percent of the world. And in the next ten years, we believe that number will go up dramatically. We’ll make significant progress in connecting the 99 percent that’s still unconnected. That will be people, that will be devices, and that will be a lot more information on the network.”

-Taken from interview of Padamsree Warrior with Mckinsey With the “Internet of Things” reaching into every aspect of modern life, analysts predict the number of connected devices to reach around 5 billion by the end of this year – up 30% from 2014. By the end of the decade, that number is expected to reach nearly 40 billion, far exceeding the number of people on the planet. Services MiraFra is closely working on WLAN, BT/ BLE (Bluetooth low energy) with Tier1 customer. The team has extensive experience in development, porting and testing of the connectivity solutions. Automotive Services While other industries, such as telecommunications or mobile phones/handsets, have already been disrupted, the automotive industry has seen very little change and consolidation so far. But it is under tremendous pressure to undergo such disruptions. Driverless cars, Electric cars are forefront in such innovations. Furies of activities are happening in the areas of ADAS, Activesafety, Sensor fusion, data analytics, artificial intelligence etc. While Tesla, Google, and Apple currently generate significant interest, we believe that they represent just the tip of the iceberg. Many more new players are likely to enter the market, especially cash-rich high-tech companies and start-ups. MiraFra technologies is already working on the vision of many automotive players. Services MiraFra technologies provide development and testing services in infotainment domain (Media, Digital Radio, Bluetooth, MOST, HMI, AUTOSAR). Validation of ECUs at component/system level. Storage Services If people are the heart of an organization, then the data center could be considered its brain, and maybe even its mouth. Quality storage and handling are key to an organization’s success. The demand for storage has grown more than 50% annually in recent years, a rate faster than the rapidly decreasing unit cost of storage. If storage costs continue their rapid rise, enterprises must manage storage more efficiently if they are to exploit new forms of information such as more detailed financial data, digital images in life sciences or video in media companies. It is a daunting challenge for IT managers to combat the rising volume, cost, and complexity of storage. They must make decisions on a wide range of issues about storage architecture, design, operations and performance. MiraFra is helping its customers in development, and testing of new technologies for data storage. Services MiraFra provides services for managing enterprise storage within virtualized environments; specifically, VMware. Substantial experience with SAN and NAS technologies to include: Network File System (NFS), Fibre Channel.

CASE STUDIES- To portray our enormous industry experience in this area, here are few case studies. To know more, feel free to contact us. Porting of UGW to Puma-7
Power Optimization for Windows Platform Board Bringup for TI AM437x Linux
Vulnerability Patches

Analog Design & Layout Std. Cells, Memories and IOs

Expertise in Layout of analog components like ADC, DAC, PLL, Bandgap, Power regulators etc. Experience in designing standard cell libraries that meet several design criteria like optimal area, power, timing etc. on several technology nodes. Specialists in high speed high density memories and associated modules. In depth understanding of design of IO cells and interfaces having unique electrical and noise specifications.

ANALOG & MIXED SIGNAL ENGINEERING Our team has in-depth expertise on variety of IPs such as SerDes (10, 16, 30 & 56 Gbps), DDRphy, USB 2.0, MIPIphy and Power management. We have also handled expanded portfolios of Data converters, clock circuits such as PLL, DLL & oscillators, Regulators, Bias, Bandgap references, Temperature sensors, UVLOs etc in almost all leading foundries at technologies varying from 500nm BCD to 7nm Finfet. Multiple full chip and IP level tape out has been successfully done with first pass silicon. What sets us unique is that the knowledge gained is shared among other team members across sites to close the skill gap at any experience level. IP solutions Data converters Clock circuits Regulators Band-gap and other critical circuit.

STANDARD CELL SOLUTIONS In the past, our team has delivered multiple std cell libraries at 90nm, 65nm, 45nm, 32nm, 28nm, 20nm, 16FF, 14nm, 10nm etc with leading foundries. These libraries include High performance, High density, 11T, 9T, 7.5T, 6T design. We are also expert when it comes to migration of libraries to latest technologies. Std cell library development. Process migration for older libraries Std cell Characterization.

MEMORY SOLUTIONS Wide range of memory with variety of architecture with top semiconductor companies has been done before. These includes Multi port memories, SRAM, Memory compilers, Register files & custom memories on cutting edge technologies. Multi-port Memory design & layout. Memory compilers and Register files. Memory Characterization.

IO SOLUTIONS Our team has delivered IO layout from 250nm to 16nm technologies. These includes GPIOs, LVCMOS, LVTTTL, LVDS, DDR etc with Analog/Power ring. ESD requirements for HBM, MM, CDM were taken care. IO Libraries design, layout & Char. ESD and Ring design to meet ESD requirements.

MISCELLANEOUS AMS verification for latest IPs has been done with leading simulators at multiple technologies with variety of customers. AMS verification Circuit simulations.

SERVICES RTL Design, Verification, GLS, SystemC and AMS Physical Design, Signoff & PV Digital Transformation Services Analog Design & Layout Std. Cells, Memories and IOs FPGA Design, Emulation and Post-Silicon Validation IoT, M2M & SMAC Enterprise Application Software Embedded Software

FPGA Design, Emulation and Post-Silicon Validation

Expertise in Prototyping and Emulation of complex IC designs for faster system debug and software bring-up. The team has lots of experience in the area of board bring-up, development of test automation frameworks, error diagnosis and system debug, OS driver development, debugging software stacks, characterization and benchmarking tests. POST SILICON VALIDATION The Post Silicon Validation (PSV) team at Mirafra is a large group of technically strong engineers in the areas mentioned below. The team is well-led, closely-knit, and has received very good feedback from the industry. Further, Mirafra has got lab facilities and training sessions exclusively for PSV engineers. We have experience and knowledge in the following areas of PSV: Board bring-up Characterization Signal Integrity Bench marking System Level Testing (SLT) Test content development Automation FPGA DESIGN & EMULATION Mirafra's team in Emulation and FPGA design have hands-on experience doing the following activities at several of our clients: FPGA prototyping Processor based emulation FPGA design

CASE STUDIES To portray our enormous industry experience in this area, here are few case studies. To know more, feel free to contact us. Emulation of PI System for Fibre Channel Chip on HTG-V7-PCIE-2000 BOARD with V7-2000T FPGA Puma-7 Verification using SV, UVM of FPGAS for Network Routers and Line Card

Physical Design, Signoff & PV

Expertise in place & route for block build/full chip development with timing closure using industry standard tools for tasks like Synthesis, Floor Plan, Placement, CTS, Signal Integrity, IR Draw, EM, Low Power Checks and Signoff checks. Extensive Knowledge in physical verification like DRC, LVS, Antenna, Density in latest nodes like 14nm, 10nm. Experience in DFT Techniques like Scan, Bist, ATPG, Boundary Scan. IMPLEMENTATION ENGINEERING At Mirafra Technologies, Physical Design Service offerings are comprised of having expertise in following domains Hierarchical/Flat level chip implementation IO Planning/Floor-Planning/Power Planning/P&R/Metal Fills Expertise in 14nm, 28nm and above. Flip Chip designs with Package Level Interactions and closure. Design Partitioning and Hardening. DFT scan insertion and Timing closure in Functional/Test modes. Core Hardening or block Build development Abstract view generation and pinning. UPF/CPF flow development. MMMC based timing optimization. Timing Budgeting and closure. Die Size optimization and related scripting and automation support Area estimation of Macros/IOs Estimation based on Bond Pads, available logic area.

Physical Verification/DFM support for Hard Macros and full chip level DRC/LVS/Antenna/Density checks. Signoff timing closure with X-talk effects, OCVs and ECO's implementation Experience in using NLDM/CCS timing models Timing closure for Functional/Shift/Capture modes. X-talk noise and delay effect on timing. Low Power Implementation for Static/Dynamic reductions Dynamic power reductions using clock gating/Retention logic/Switch cells Redhawk tool expertise in IR Drop analysis. Decap/TapCells/EndCap cells/Clamp cells insertion and optimization. Synthesis/Formal equivalence/UPF flow/CLP checks support Flat/Hierarchical synthesis approach. Scan chain insertion for improving testability and test coverage. Extensive support on DFT insertion and Simulations Extensive support in Scan, BIST, JTAG, EDT, BSC logic Insertion ATPG fault coverage analysis. Deep support in Mentor/Synopsys tool sets. EDA/CAD flow & methodology support Back-End flow development and support System administration with LSF/EOD/Licence management/tools installation support. Our philosophy is to become a dedicated service partner to our esteemed clients in all the above niche skills requirements on multiple projects and earn the most trusted design service partner. Our engineers are agile and possess the quality of quickly adapt the new flows and methodology to deliver quality results. Design Implementation Library and Flow Development IC Packaging Co Design CASE STUDIES To portray our enormous industry experience in this area, here are few case studies. To know more, feel free to contact us. GSM 3G ASIC Implementation Physical Implementation of OCTA HEXA QUAD CPU GPU Core for Mobile Chip Physical Verification and DFM Closure of Complex Mobile Cores Setting up UPF Based Flow For SOFT-IP For Mobile Application Touch Screen Application Chip Tapeout

RTL Design, Verification, GLS, SystemC and AMS

Expertise in Front-end RTL design and SoC integration of multi-million gates IPs and SoCs for a variety of industry verticals like mobile, processors, networking and multimedia. Experience in the design verification involving standardized methodology like UVM based functional and formal techniques, VIP development, Equivalence checking and Gate level simulations of complex IP and SoC designs. FUNCTIONAL ENGINEERING The Functional Engineering Group at Mirafra provides design services and solutions to some of the biggest names in the global semiconductor industry in the areas of RTL & FPGA Design, Design Verification, Gate Level Simulation, Emulation, Post Silicon Validation, AMS Verification and SystemC Modelling. With a strong legacy of more than 11 years in the industry, and with the rich experience of having worked with a majority of the Fortune-500 companies across the globe on the above mentioned technology verticals, we are ideally placed to take any design idea/architecture from concept to netlist, and further perform post silicon validation of the same. With

engineers of varying levels of experience in each of the above-mentioned verticals, and with technical leads to drive, monitor and deliver results, our commitment to quality of deliverables will continue to be at the levels that have made MiraFra stand out in the industry. The engineers in the functional engineering group have hands-on experience on the latest technologies, methodologies, languages and techniques used in the industry. We are one of the few, if not the only, service companies that has full time training faculty and labs to enable our engineers to be at their best when working on client projects. More information on the different technology offerings, areas of expertise, domain knowledge, methodology knowledge etc. can be found in this section. You could also go through this website to look at the various business models that we offer to our customers. These have been created with the aim of providing flexibility and multiple options that our customers can choose from.

RTL DESIGN Our team of experienced design engineers, complemented by a group of mid-level engineers have worked on multiple aspects of the RTL design flow on chips used in the automotive, mobile, networking, multimedia and processor industries. The following schematic demonstrates how MiraFra's expertise helps the pieces of the jigsaw fall into place.

VERIFICATION MiraFra's verification team has proven expertise on taking complete ownership of verification of a design from scratch – whether that is an IP/SOC/subsystem – and taking it to verification closure by performing the following activities:

- Understanding the design specification document and creating the test plan
- Creating the complete verification environment using industry standard methodologies like UVM/OVM/VMM
- Executing the test plan by using an intelligent mix of constraint random, directed and random test cases
- Gate level simulations
- Verification closure through corner case verification, coverage closure and regression closure

SYSTEMC VERIFICATION MiraFra has a small but capable team with hands-on expertise in various aspects of the chip design flow where SystemC plays a critical role. They are represented in the chart below.

ANALOG & MIXED SIGNAL VERIFICATION The AMS verification team at MiraFra has the skillsets required to execute on:

- Analog/mixed-signal block simulations
- Modelling of analog and mixed signal blocks using Verilog-AMS
- Creating digital mixed signal test benches
- Comprehensive AMS full chip verification of mixed signal ASICs.

CASE STUDIES To portray our enormous industry experience in this area, here are few case studies. To know more, feel free to contact us.

- Arm Based Processor Subsystem Verification
- Full Chip and Module Level Verification of a Multi-Million-Gate ASIC
- Full Chip Verification of a Storage Area Network (SAN) SOC
- Functional and Formal Verification of Wireless 3G Modem IP Using SV
- GLS and Functional Verification of a Multimillion Gate Mobile SOC Methodology Independent VIP Development Using SV and XXVM in MiraFra
- ODC Mixed Signal Verification of a CMOS Photonics Based High-Speed ASIC using SV, UVM
- Verification of a Complex SOC With High-Speed Interfaces using SV, UVM
- Verification of LPDDR3 Controllers using SV & UVM

IoT, M2M & SMAC

We develop IoT POC right from board design, component selection to modification/enhancement of existing solutions, with WiFi, Zigbee, BLE etc. interface in the area of industrial and home automation, automotive industry etc. Also, we provide solutions for secured content management and delivery. IoT AND M2M Internet of things is all about networking of physical object with sensors collecting information and connected to the internet. The data received from these device shall be analyzed to get information, which can be used to optimize product, services and operations. The application of the same is wide spread with intense focus on Energy optimization, Smart Home, Automotive and Medical domain. According to McKinsey Global Institute research—billions of dollars could be saved in the care of congestive heart failure alone in the health care domain. Similar saving can be achieved in energy optimization, production and proactive maintenance. The market for IoT is increasing, according to market research the current size of the market is around 4 billion and expected to increase by 4 time in the next 6 years. This opportunity has huge business potential for the companies working on semiconductor, storage and analytics domain. We in MiraFra has strong skill in addressing these requirement with our experience in chipset designing, embedded software development and full stack development experience. Services In IoT, MiraFra provides service in architecting the solution. The solutions include development from scratch using off-the-shelf chipset or customize existing solution to reduce the cost or increase the features. Each IoT solution focuses on having optimized & robust HW, HW/SW security, secure communication (wired/wireless). The solution also focus on saleable backend cloud solution to store and process large amount of data along. Following are the service provided in IoT

- Architecting the solution for industrial automation, home automation, freight management, hospital management etc.
- PCB design for Custom made board with the perspective of reducing cost and adding special features.
- Optimizing the hardware, firmware and software to reduce power consumption
- Board bring up with low level driver development, porting customized operating system or scheduler and enabling interface for WiFi, Zigbee and BLE
- Porting of web service, enabling TCP/IP to connect to cloud
- Cloud backend development with secure connection
- Analysis of the stored data / data analytics
- Web UI development, mobile application development for controlling the system and for viewing meaningful information to take corrective actions.
- Testing the solution for robustness, safety and security.

SMAC Social, Mobility, Analytics, Cloud (SMAC) technology synergies solution for transforming organization digitally with the focus of reducing cost, seamless working across geography and increase the operational efficiency of any business with quick/life feedback. The evolution of social media has come with the concept of connecting known people. Followed with this came the sophisticated platform to know one's friends

circle and get connected with unknown people. These platform provided channel for brand to communicate with their audience. We are now in the process of seeing technology changes where the social media based customer relationship management software can approach to the intended customer. These software can also predict the trends with the help of data generated in the social media and can do targeted advertising. Similarly, in the past decade mobile usage has increased leaps and bounds. This leads the customer centric firms to introduce BYOD (bring your own device) to improve the efficiency. This is getting upgraded to enterprise mobility and will reach a place where the device are just used to view, update and compute on content whereas the content is stored in the cloud which can be accessed in secure way. Yet another advancement has happened in the analytics where this term is not new, but with the help of big data we have possibility to analyze huge verity and volume of data flowing from the social media. This helped in creating model to predict the future outcome based on the data pattern. In the current trend analytics are reach new heights where a customer is served with what he wants even before he makes a decision. All the above requires huge and scalable processing power which is provided by cloud computing. The advancement in social, mobility, analytics and cloud computing has resulted in SMAC stack which enhance the operation of a business and also preparing the company for future challenges. Adaptation of this technology is increasing leading to new opportunity. We in Mirafra understand the opportunity that will be resulting out of this technology and have digital practice group to address this requirement. Services Following are the service provided by Mirafra in line with the SMAC in different areas: Mobile application development on native and cross platforms Testing of application and connected device. End to end Solution for Mobility with data Security Enabling Software as service (Saas) Platform as service(PaaS) and Infrastructure as service (IaaS) Enabling Mobile device management Analytics on operation Analytics on Marketing and customer behavior Fraud and Risk analysis. Fraud and Risk analysis. Enterprise performance analysis. Digital marketing CASE STUDIES To portray our enormous industry experience in this area, here are few case studies. To know more, feel free to contact us. Case Studies IoT Case Studies SMAC

Work Culture and Life @Mirafra

At Mirafra, an atmosphere of collaboration and information sharing is encouraged. A relaxed, stress-free work environment enables us to focus our energies towards our goals. Open door policy of Mirafra reduces communication barriers within the

organization. The management is very approachable and eager to connect and resolve any individual issues. Fresh thoughts and suggestions are welcomed, discussed and considered. 'We can and together we will' remains our mantra. Teams complement individual strengths and strive to achieve desired results. Proactive, responsible and accountable individual efforts are appreciated and encouraged. Excellence is encouraged and expected from all employees. Fun@work – link... (Along the work, we also let loose and enjoy sports events, birthday bash, team outings and Family Day)

Career Progression Mirafra believes in providing fast track career progression to the employees. Highly motivated and deserving employees scale the growth levels at a higher pace. The progression happens purely on the basis of contribution, performance, skill capabilities and experienced gain keeping in mind the potential of an individual to grow and handle the next level responsibilities. Training & Development "Sharpen Your Axe" is Mirafra's a very comprehensive training and development program. We strongly believe that our success comes from both professional and personal strengths that our employees have. Keeping this in mind, our training programs are customized to help employees hone both their professional and personal skills. These training modules are designed by industry experts, certified trainers and methodology specialists. Regular training sessions are conducted for employees, with expert internal and external trainers delivering technical and soft skill me under which we conduct several technical and non-technical training's and presentations....

Work Environment Mirafra is an equal opportunity employer and it appreciates the efforts of its employees and strives to provide them with the best facilities and benefits equal or better than most of the services and product companies. Stress free employees can focus better and achieve their potential paving the path for success.

Standard Benefits	Excellent
opportunity to work with the best talent	Best in class compensation
Annual paid vacation	Motivational incentive plans
Group Mediclaim Insurance	Recreational facilities
Company outings, get-togethers and dinners	Work from home facilities
Regular professional and personal growth training	State of the art facilities for work

Contact Us

Mirafra SW Technologies Pvt. Ltd. is an end to end product engineering and SW services company. It provides services right from chip or SoC design to new edge enterprise application development with cutting edge AI/ML features, including firmware and embedded software.

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