



Focus Area: Computer Systems

Modern computer systems can predict the weather, track global inventory, monitor thousands of in-flight aircraft and satellites, make investments, provide phone calls and videos on a cell phone, and perform dozens of other critical and valuable services. Computer costs fall annually while performance grows exponentially. Computers have become the engines of modern living and civilization. They are also the most complex machines on the planet and push the state of the art in nearly every technological area, from hardware to programming to reliable system design.

The TIPRA computer systems focus area brings together recognized industry, academic, and research experts in computer hardware, software, and systems. This TIPRA network helps designers, producers, and operators of computers achieve their technical goals and meet their business challenges by rapidly leveraging cutting edge R&D worldwide. TIPRA network members can structure IP portfolios, collaborate with product engineering teams, develop strategic partnerships, and help structure and close deals for mergers and acquisitions. In today's dynamic market of multi-core processors and systems, rapid adoption of new technologies is essential to compete.

Hardware challenges include thermal management on all scales from chip to data center, dense high-speed electrical and optical signaling, memory system design, packaging, and achieving high reliability.

Software challenges include the migration of single-threaded applications to multi-core systems, adoption of new programming models, and data security and coherence in cloud computing environments.

Systems challenges include system management in a heterogeneous environment, effective utilization of virtualization, and maintaining high availability.

Some topic areas in which TIPRA network members have particular depth include:

- Liquid and two-phase cooling components and subsystems
- Multichip modules, packages, and cards
- Fiber optic arrays, optical interconnects, and parallel links
- Threading and parallelization
- Virtualization
- Multi-core systems
- Fault management architecture
- Dynamic monitoring and control

Computer Systems Focus Area Leader: Dr. Rick Lytel

Rick Lytel leads a TIPRA network team experienced at leveraging technology advances to solve product problems, revamp product lines with innovative features, and create new products for emerging markets. Dr. Lytel has started R&D ventures for Lockheed, Akzo Nobel, and Sun Microsystems, among others. His experience includes launching multimillion dollar R&D facilities, building teams comprised of senior engineers and fellows, and establishing innovative R&D programs. Dr. Lytel holds a Ph.D. from Stanford University. An adjunct professor at Washington State University, he has published 80 papers, and holds three patents. Dr. Lytel is a Senior Member of the IEEE and a member of the American Physical Society.

About TIPRA:

TIPRA is a managed, global invitation-only network of over 1000 world-class senior technical and market experts in selected economically-important high-tech industries. TIPRA network members are individually selected for their deep competence and high professionalism. They typically have 20+ years of experience in their industries, having held leadership roles in both large and small businesses. TIPRA network members have delivered hundreds of consulting projects in their fields in the last few years. They have worked with C-level managers of companies, investors, regulators, standards and industry forums, and provide answers and solutions to their complex technology and business problems.

For more information on TIPRA's capabilities in these technical areas, please contact Dr. Rick Lytel at +1 650.393.0854, email rllytel@tipra.com, or visit our web site at www.tipra.com.