CPI is a small business of 40 employees founded in 1984 that provides professional scientific and information technology (IT) services to government organizations and prime contractors. CPI performs a broad range of scientific services to understand and describe the Earth’s environment from its surface to outer space, the objects in orbit, as well as the IT services required to support such activities. CPI’s key areas of technical expertise include:

### Scientific Expertise
- Remote sensing (EO/IR, microwave, SAR)
- EO/IR observables of atmosphere / clouds / terrain
- Atmospheric radiative transfer
- Charged particle transport / auroral physics / space weather
- Atmospheric internal / gravity wave physics
- Atmosphere and ocean modeling
- Ionospheric physics / radio wave propagation
- Operational satellite ground data analysis systems

### Software Engineering Expertise
- Full life-cycle software development
- Distributed scientific computing: CORBA, TENA, ESMF, MPICH
- Hardware-in-the-Loop (HWIL) simulation architectures
- Agile development practices
- Semantic sensor web development: OGC, OASIS
- Requirements analyses and verification

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**What We Do**

Our clients’ needs span every aspect of environmental research and our goal is to provide cutting edge solutions in the field of computational physics that meet or exceed our customer’s expectations. These services range from providing state-of-the-art retrieval algorithm development in remote sensing, to developing and applying first principles modeling.

Services CPI Provides Include:
- Atmospheric Remote Sensing
- First Principles Modeling
- Scene Generation
- Scientific Data Distribution
- Space Situational Awareness
- IT Support

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Past Performance

- Twenty-five years of continuous contract support among three divisions of the Naval Research Laboratory.
- Development of industry standard first principles physics and specification models: Atmospheric Ultraviolet Radiance Integrated Code (AURIC), Boltzmann 3 Constituent (B3C) auroral electron transport, and the PRISM family of ionospheric models (PRISM, PIM, IECM).
- Development of gravity wave modeling applications that produced the first detailed mountain wave simulation for the Martian atmosphere and mountain wave forecasts for the NASA ER-2 aircraft missions.
- A long record of peer-reviewed publications which can be found at www.cpi.com/about/publications.html.
- Distributed scientific computing for missile defense physics-based modeling and simulation programs.
- Development of operational algorithms that are used for both NASA and DoD satellite missions such as Defense Meteorological Satellite Program (DMSP) and WindSat.
- Development of a data distribution center (www.cpi.com/datacenter) that utilizes a robust web application framework to support multi-dimensional queries on multi-terabyte data sets.
- Extensive experience in development and implementation of operational satellite ground data analysis systems such as WindSat and MIS for NRL and JMAPS for USNO.

R&D Capabilities

- Real-time modeling and simulation
- Multi-physics model development and application for the Earth sciences
- Algorithm development for remote sensing applications
- Space Situational Awareness (SSA)
- Ionospheric research and global ionospheric specification
- Radio propagation modeling for operational applications
- Requirements specification and management
- Requirements analyses and verification

Primary Employee Sites

- Springfield, VA (Headquarters)
- Boulder, CO
- Naval Research Laboratory (NRL) Washington, DC
- United States Naval Observatory (USNO) Washington, DC

Key Customers

- **DoD:** NRL, ONR, USNO, AFRL, USASMDC, MDA, NRO
- **Civilian Government:** NASA, NOAA, NSF
- **Large Business:** SAIC
- **Small Business:** Riverside Technology inc., NWRA, Kinetics (kineticsinc.com)
- **FFRDC:** Aerospace Corp.
- **University Affiliated:** CU/LASP, UCF
- **International:** European Space Agency, Jülich (Germany)

Contract Vehicles

- GSA Schedule for Information Technology Professional Services
- NOAA Scientific and Technical Support Services Contract

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