Our Research

We perform innovative research and development involving sensor signal processing, radio frequency systems, and advanced systems engineering. Our work includes software development, hardware design and production, and chemical engineering. Our creative, highly technical staff continually seek new research opportunities and work collaboratively to transition our work into both government and commercial products and services.

Our Engineering Services

We offer system engineering and analytical services to support the unique requirements of our customers.

- > Systems Analysis
- > Systems Engineering
- > Requirements Definition
- Engineering Testing

Our Products

Many of our research and development projects have transitioned to commercial products available for licensing or direct purchase. Product domains include:

- Video Processing Software
- Embedded Imaging Systems
- > Fusion and Tracking Algorithms
- > Modeling, Simulation, and Emulation
- > Radio Frequency Systems and Antennas

About Toyon

Toyon Research Corporation is a nationally recognized small business performing both technology development and systems engineering.

- > Founded in 1980
- > Employee-Owned
- > Small Business for Research and Development
- > Offices in Santa Barbara, CA and

National Capitol Region

Our Facilities

We maintain a highly technical working environment to support Department of Defense, government and private sector customers.

- > Cluster Computing Resources
- > RF Laboratory Facilities
- > AS9100:2016 (Rev D) Quality Certified

Our Staff

Our unique combination of technical expertise, objectivity, and creativity in a small business environment enables responsive solutions to difficult problems. Our staff includes a balanced mix of B.S., M.S., and Ph.D. degrees from a wide breadth of technical backgrounds.

- Computer Science
- > Engineering Disciplines
- > Physical Sciences



Providing innovative solutions to national challenges with technical analyses, research and product development.

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How We Work

Toyon is organized in six business teams that perform applied research, systems analysis, and product development to support the requirements of our customers. We offer software and systems engineering services, sell a unique portfolio of innovative products, and periodically publish our research to support the advancement of our industry.



Aerospace Systems

The Aerospace Systems Team performs systems analyses in support of advanced sensor and weapon programs.

Our strengths include:

- > Evaluation of system effectiveness
- > Feasibility & utility studies
- > Derivation of systems requirements
- > Ground & flight test planning, execution, & evaluation
- > LRIP specialty hardware production
- > CONOPS development
- > Physics based modeling and simulation

We advise government organizations by performing detailed systems analyses and conducting operational tests that quantify technical performance.

Antenna and RF Systems

The Antenna and RF Systems Team conducts advanced research and development focused on prototype system demonstrations and sensor design.

Our strengths include:

- > Adaptive and multifunctional antennas
- > Navigation, guidance, and control systems.
- > Advanced electronic systems design
- > Advanced motor and generator design
- > Distributed aperture systems
- > Radar systems design and analysis
- > Unmanned systems development
- > Electronic warfare systems design
- > Inertial systems control and calibration

We maintain a full antenna and electronics laboratory, including an automated far-field anechoic chamber.

ISR Algorithms

The ISR Algorithms Team develops advanced algorithms and embedded solutions to enhance raw sensor data and to detect, localize, identify, and track objects of interest.

Our strengths include:

- > Video and image processing from space, air,land & sea
- > Image-based 3D reconstruction and geo-registration
- > Automated detection, classification, & identification
- > Persistent tracking of targets of interest in video
- Machine learning applied to sensor data analysis
- Video enhancement and operator interfaces
- Embedded low size, weight & power video processing
- Specialized sensor prototyping & product development

RF Products

The RF Products Team produces advanced active and passive antennas and related products under AS9100 quality standards.

Our strengths include:

- > Mature, high-reliability RF Products
- > Most products at TRL8+
- > AS9100:2016 (Rev D) quality certification
- > Custom RF component design and production
- > Environmental certification services for antenna systems

We utilize national test facilities for environmental and RF testing and certification of specialized RF products.

(||) Autonomous Systems

The Autonomous Systems Team designs, develops, and tests advanced multi-platform mission control systems to support complex autonomous military missions.

Our strengths include:

- > Decentralized multi-platform collaboration
- > Decision and control algorithms
- > Data fusion and tracking algorithms
- > Decision-support information systems
- > Fusion system design and analysis
- > Modeling and Simulation Test Bed
- > Communications performance modeling

We develop against simulated environments, validate in live flight tests, and quantify performance through advanced algorithm analytical services.

A Homeland Security

The Homeland Security Team specializes in implementing and evaluating sensor and protective systems for critical infrastructure protection.

Our strengths include:

- > Expertise in chemical, biological and radiological threats
- > Sensor systems to detect CBR threats
- > Internal & external transport & dispersion modeling
- Tracer testing: definition, planning, execution & sample analysis
- > Decision-support systems
- Designing & implementing advanced building control strategies
- > Test and evaluation of operational equipment

We support the full life-cycle of facility protection capabilities, from up-front system architecture definition to system integration, qualification, and recurring integrity monitoring.

INNOVATIVE, RESPONSIVE, AND INSIGHTFUL SOLUTIONS

