



Capabilities

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SCIENCE and TECHNOLOGY

Empowered Employees. Innovative Solutions

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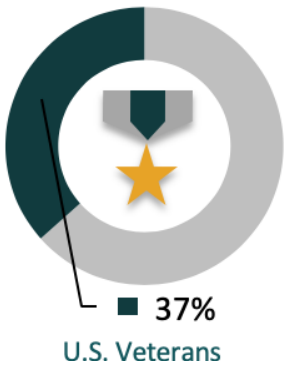
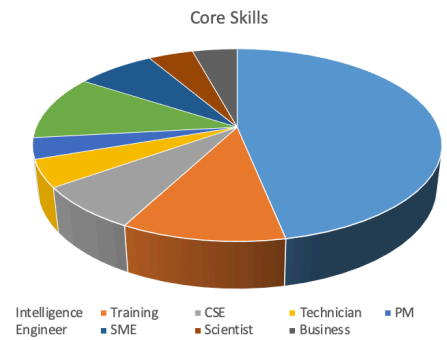
ZELTECH’S CORE STRENGTH:
OUR PEOPLE

ZelTech is a highly respected and sought after professional services, engineering, and information systems company. We support global operations from our headquarters in Hampton, VA and many other facilities and operating locations. We are an ISO 9001:2015 quality management certified company, and our core capabilities include wide ranging expertise and experience in technologies and processes related to homeland security, defense and intelligence operations, information assurance, training, visualization solutions, and critical infrastructure protection. We deliver Systems Engineering

and Technical Assistance (SETA) services and extensive science, technology and engineering support that help monitor global WMD activities, provide continuous support to U.S. combat operations, and help ensure our forces avoid/ quickly mitigate strategic and tactical surprise. We also provide R&D Rapid Prototyping, Augmented and Virtual Reality solution, training programs and configuration management to give our Intelligence Community and the Department of Defense the most advanced technical collection and analysis capabilities possible.

Providing customers with decision support, exercise and training support, experimentation, predictive analysis, information operations, and command and control capability.

Most of our people hold advanced degrees and high level security clearances.



THE ZELTECH TEAM
INCLUDES:

- PROGRAM MANAGERS
- SUBJECT MATTER EXPERTS
- EXPERIENCED OPERATORS
- SYSTEMS ANALYSTS
- PROGRAMMERS
- CONFIGURATION MANAGERS
- INTELLIGENCE SPECIALISTS
- ENGINEERS
- COMPUTER SCIENTISTS
- INFORMATION ASSURANCE ANALYSTS

- HOMELAND DEFENSE JOINT & COALITION OPERATIONS
- AIR DEFENSE
- C2
- HUMINT
- MASINT
- CBRN
- DEFENSE & ALL SOURCE INTELLIGENCE PROGRAMS



CAPABILITY MATRIX

Customer	AF Technical Applications Center	Navy	DIA S&T	AF Research Lab	AF Special Operations Command	Army	Defense Threat Reduction Agency	Sandia Nat'l Lab	Johnson Space Center
Department/Agency	DOD	DOD	DOD	DOD	DOD	DOD	DOD	DOE	NASA
Subject Matter Expertise	x	x	x	x	x	x	x	x	x
Logistics	x		x						x
RDT&E	x		x	x			x	x	x
Acquisition	x		x	x					
Program management	x		x	x	x	x	x	x	x
Field operations	x		x	x	x	x	x		
Concept of Operations (CONOP) development	x		x	x	x	x	x		
Requirements development and testing	x		x	x	x	x	x	x	x
Strategic planning and technology roadmaps	x		x	x	x	x			
Technical proposal review	x	x	x	x	x	x			
National laboratory, industry, and academia outreach and support	x	x	x	x	x	x	x	x	
Technology Transition planning	x		x	x	x	x	x		
Modeling and Simulation	x	x	x			x		x	
Laboratory Operations	x		x						
Technology Development			x	x			x	x	
Rapid Prototyping			x						
Maritime Services			x						
SETA	x		x						
Systems Engineering		x	x	x		x			x
Software Development	x	x	x						
Network Engineering	x		x	x		x			
IT Support			x			x			
Databases	x		x	x	x	x	x		
Cyber Operations			x	x					
Multi-INT			x	x		x			
ISR				x	x	x			
Business Analysis			x	x			x		
Operations Research			x	x	x	x	x		
Intelligence Analysis			x	x		x			
Targeting Operations						x			
Counter Improvised Explosive Devices (C-IED)			x			x	x		
Unmanned Aircraft Systems					x	x	x		
Counter UAS (C-UAS)						x	x		
Training Development / Delivery			x	x	x	x			
Knowledge Mangement			x	x	x	x			

Science & Technology
Intelligence, Surveillance & Reconnaissance

S&T/ISR Capability Summary

ZELTECH PERSONNEL
PROVIDE A
WIDE RANGE OF
TECHNICAL AND ADVISORY
EXPERTISE AND
SUPPORT IN A NUMBER
OF CRITICAL AREAS,
INCLUDING
ACQUISITION,
LOGISTICS,
RDT&E,
FIELD OPERATIONS AND
PROGRAM MANAGEMENT

We provide technology assessments and operational transition at all levels of systems engineering and development as well as full-spectrum ISR SME support to ensure our customers are able to meet current and evolving mission requirements. This includes:

- Concept of Operations (CONOPS) development and Concepts of Employment (CONEMP) development
- Requirements development and testing
- Strategic planning and technology roadmaps
- Technical proposal review
- National laboratory, industry, and academia outreach and support
- Technology Transition planning
- Modeling and Simulation
- Single-source, multi-source, all-source and fused intelligence products
- Performing ISR Operations, Training and Standards and Evaluation Services
- Assessments of current ISR operations and training capabilities and improvement recommendations
- Developing ISR Tactics, Techniques and Procedures
- Identifying ISR Collection Requirements
- ISR Collection Plans
- ISR strategic plans
- Technology acquisition recommendations
- Providing Operational Testing of new ISR Systems
- ISR Enterprise outreach and support
- ISR Technology Transition planning

Our capabilities are described in more detail below through a closer look at our Science and Technology efforts in support of the Air Force Technical Applications Center, Defense Intelligence Agency, US CENTCOM, USSOCOM, Air Force and Army Special Operations Commands, and the Air Force Research Laboratory.

Intelligent Design and Vulnerability
Mitigation Solution Engineering

ZelTech Solutions Engineering

ZELTECH OFFERS
A COMPLETE
DESIGN
ENGINEERING
SERVICE TO
TRANSFORM
IDEAS TO
FUNCTIONING
PROTOTYPES.

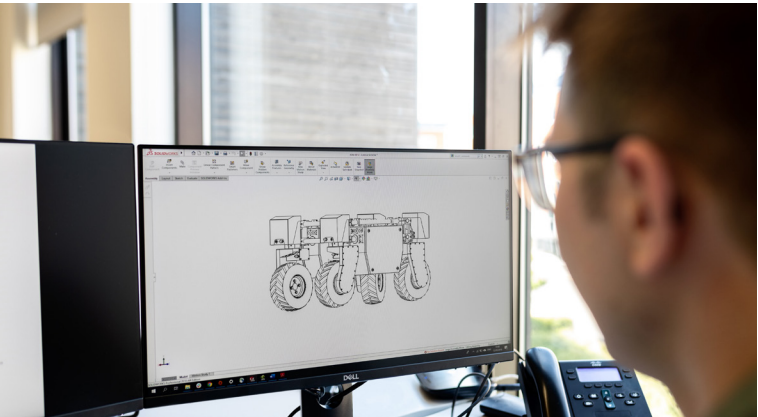
ZELTECH SOLUTIONS ENGINEERING ALLOWS
ANY CREATOR TO TAKE THEIR CONCEPT
THROUGH THE DESIGN AND DEVELOPMENT
PROCESS WITHOUT THE NEED FOR COSTLY
INFRASTRUCTURE INVESTMENT AND
COMPLEX COORDINATION EFFORTS.

Our scalability allows us to support any project at any point in the development life-cycle, including requirements development, prototyping, and operational testing and transition.

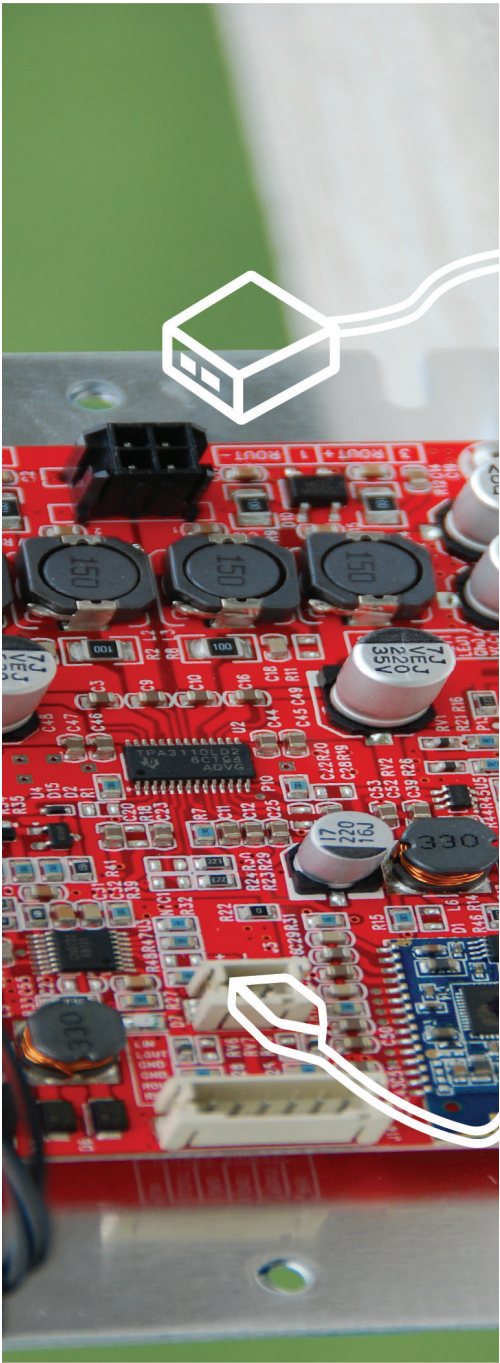
We specialize in unmanned systems and vulnerabilities engineering helping customers minimize risk in an ever evolving “smart” autonomous world.

ZelTech Solutions Engineering offers a wide range of design and development services:

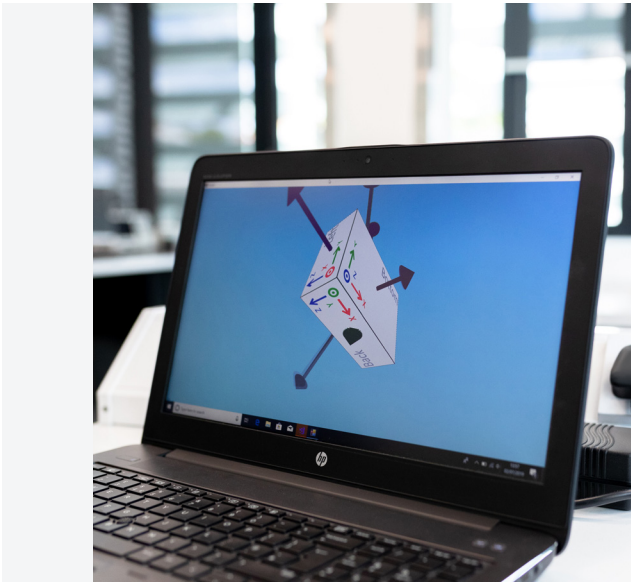
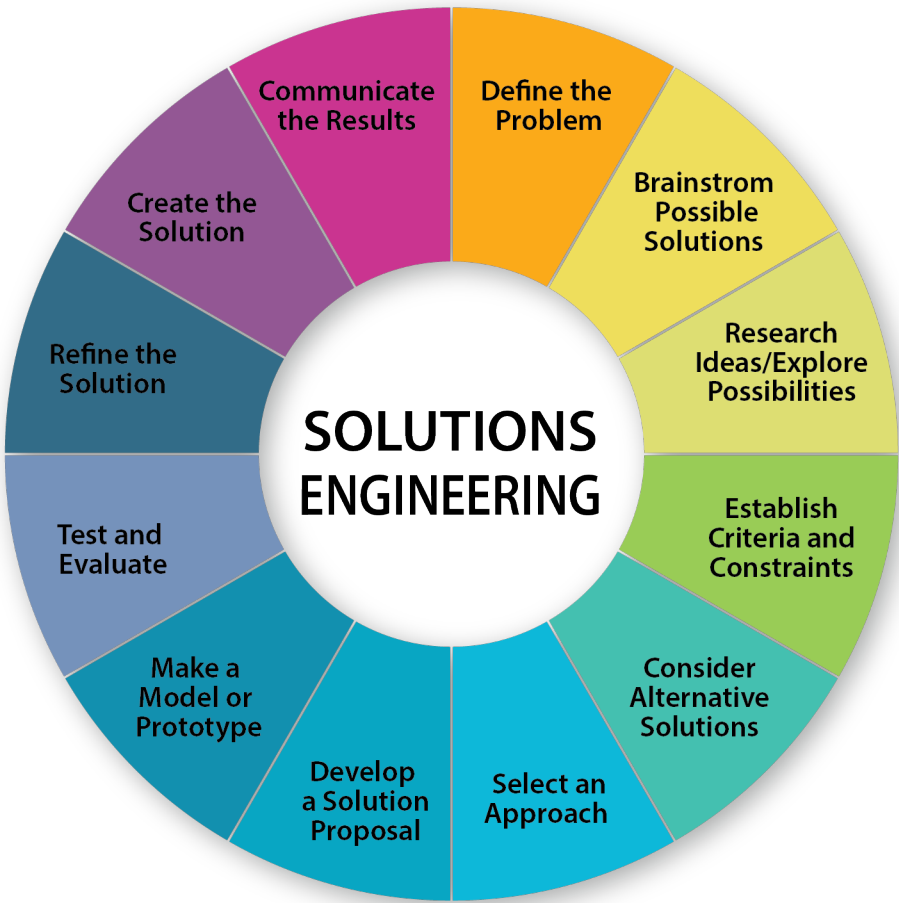
- Product design and development
- Rapid prototyping (3d printing, other)
- 3d modeling
- Testing
- Process management
- Mechanical engineering
- Power management
- User Interface and Human Integration
- Firmware / software
- Vulnerabilities engineering
- Feasibility studies
- Industrial design (attractive design)
- Idea and concept development
- Systems Engineering



We use an agile solutions engineering approach coupled with the latest computer aided technology to deliver realistic, dynamic, virtual imaging and modeling quickly and cost effectively.



ZelTech Solutions Engineering provides complete life cycle design support to include source term modeling and simulation, source term propagation, sensor faceplate and sensor response, subsystem modeling, data outputs, and processing.

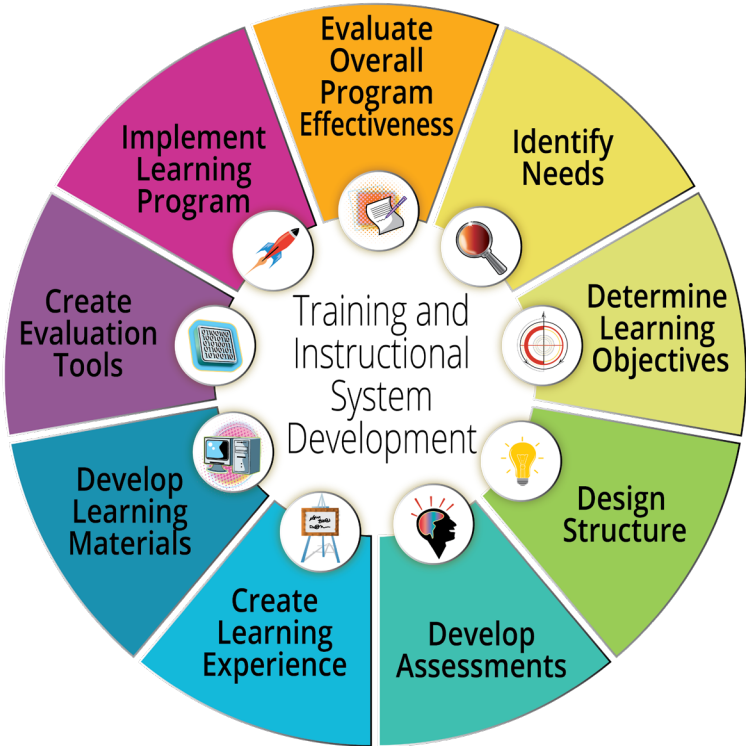


Vulnerability Engineering

- Design assessment of hardware and software for potential vulnerabilities
- Data communications vulnerabilities
- Vulnerability independent testing and verification
- Solution design plans and recommendations
- AI vulnerability assessments

ZelTech Training and Instructional System Development

Our Instructional System Development (ISD) team provides support for every aspect of training and education. We engage in formalized lecture, mission scenario creation, knowledge and skills evaluations, curriculum development, mobile training team execution, course re-writes, training records management, training program administration, and courseware implementation. ZelTech provides Training and ISD support for DOD and private sector companies with proven success for even the most demanding stakeholders through tailored training programs and educational courses.



OUR SERVICES INCLUDE BUT NOT LIMITED TO:

- Training Program Architecture
- Site Survey and Training Needs Analysis
- Knowledge and Task Proficiency
- Training Program Gap Analysis
- Formalized Instruction Training
- Syllabus Development
- Rubric Creation and Implementation
- Knowledge Measurement Tool Design
- Task Demonstrated Proficiency Measurement Tool Design
- Measurement Tool Trending and Analysis
- Kirkpatrick Model Training Evaluation Services
- A.D.D.I.E. Instructional System Development
- Qualitative and Quantitative Training Trending



VR/AR AND SYNTHETIC ENVIRONMENTS

ZelTech provides support for virtual reality and augmented reality solutions for our customers to create synthetic training and immersive environments optimizing cognitive retention and situational awareness while mitigating risk. We have a proven track record of developing cost-effective and highly specialized VR/AR solutions as demonstrated with a VR street-view demo of Seattle that leveraged a machine learning capability to draw images from social media as well as other sources of media for improved situational awareness.



ZelTech has created a synthetic environment training tool using WGS84 ellipsoid models and detailed 3D assets. We are experienced at developing high resolution, high fidelity 3D models of different assets to include human models, buildings, vehicles, weapons, as well as, sensor field of views all with highly detailed object interaction animations. As an example, we developed applications using GIS, building, and terrain data, as well as, 3D positioning and shadow modeling to construct full scale building models and agent interaction for a customer program. We utilize the Unity Engine and tools like Maya, ZBrush, and Adobe Creative Cloud suite to develop our products.

Unmanned Systems

MARITIME, TERRESTRIAL, AND AERIAL UNMANNED SYSTEMS/ SUBSYSTEM DESIGN:

- Power management
- Propulsion systems
- Custom payload harness
- Firmware and software design
- Collection system integration
- Data communication and processing
- Vulnerability testing and design assessment

S&T, Rapid Prototyping and Space Counter Space

COLLECTION REQUIREMENTS

ZelTech authors initial collection requirements based on current capabilities and operational needs defined by the customer. We help identify technical gaps that must be addressed to support of advanced technical and operational solutions. **We work with all stakeholders via technical interchange meetings and working groups to ensure technology development is meeting defined requirements.** In addition, we support direct development through rapid prototyping of innovative collection systems that meet emerging needs.

CONOPS

ZelTech develops CONOPS, taking into account the operational needs defined by the customer. These CONOPS defines requirements, roles and responsibilities of each organization associated with the overall task.

IC AND MASINT

We provide subject matter experts across a variety of disciplines who aid in collection coordination within the IC and DoD, deliver planning and operations support for IC and MASINT operations, and help develop system requirements.

EXPLOITATION REQUIREMENTS

ZelTech provides Artificial Intelligence, Machine Learning, complex data analysis, and analysis algorithm development in support of analysis and exploitation requirements. As an example, we have developed custom processing routines for FMV feature extraction onboard deployable systems in austere conditions in order to meet exploitation requirements.

RESEARCH & DEVELOPMENT

We provide reverse engineering and ethical hacking of commercially available products in order to exploit vulnerabilities supporting our customer’s missions. Leveraging our experienced engineers, computer scientists, and cyber effects experts, we deliver innovative hardware and software solutions taking advantage of methods for onboard sensor processing in low band-width communications environments and advanced computing approaches such as parallel processing, GPU threading, and HPC cloud services. Additionally, we provide Artificial Intelligence, Machine Learning, Deep Learning, and augmented/virtual reality (AR/VR) solutions for data discovery, feature extraction, situational awareness, operations planning, and improved manpower efficiency.



AI

ZelTech combines social media and open source data scrapes with custom AI routines in order to extract unique feature sets and correlate seemingly disparate data. We have also explored the utility of the Internet of Things to include the suite of small form factor Arduino sensors in support of a full synthetic training environment network and notification and identification capabilities coupled with near-real time cloud AI feature recognition.

IT SYSTEMS ANALYSIS AND NETWORK ADMINISTRATION

We provide IT systems analysis and network administration support for operations and maintenance of classified and unclassified information systems to DIA S&T. Our in-depth understanding of both DIA and Air Force host requirements ensures high reliability, system availability and security. ZelTech provides support for JWICS, SIRPNET, and NIPRNET networks and systems. We provide daily technical operations support for Local Area Network (LAN), video teleconferencing equipment, and WEB services, as well as required Initial Adversary Vulnerability Assessment (IAVA) security updates and maintenance to all hardware, ensuring IT Infrastructures are configured and maintained, to DoD Intelligence Information System (DoDIIS) standards. ZelTech ensures computer-based applications and other administrative support are continuously available to Government action officers and concept developers. We support directorate-wide program management applications for collaboration between geographically dispersed offices; and work with users to design, develop and maintain individual web pages, Intranet and secure Internet sites, and web-based catalogs using MS SQL Server and SQL Management.

PROCUREMENT AND CONTRACTING

ZelTech provides procurement and contracting support for in-house technology development and evaluation and monitoring of other proposals and development projects. We help Government program managers, action officers, and acquisition professionals develop and coordinate statements of work, cost estimates and other pertinent documentation. We build detailed forecasts and track vendor progress against planned cost, schedule and performance parameters, and provide expertise in development and oversight of test and evaluation activities at each phase of development.

SETA SUPPORT

ZelTech provides DIA with SETA support for technology development projects including planning, testing and evaluation, exercises, training, documentation and operational fielding. In addition, we provide systems engineering, logistics support, coordination of analytical instrumentation at off-site test facilities, and operator training on equipment, technologies, and processes. We support tests, exercises, pre-operational planning, workup and operations, fielding, and post-deployment operational checks. We are experienced at coordinating and executing all aspects of sensor tests, encompassing engineering consultation to outside organizations, integration with various hosting platforms, deployments, recoveries, and data post-processing.

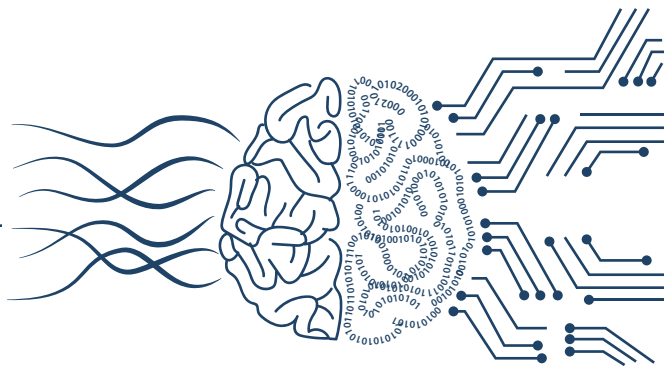


SURGE

ZelTech provides surge SME support to meet emerging technical needs, technical exchanges, and expert panels. We have broad expertise across a wide variety of areas to include physics, electrical engineering, mechanical engineering, biological, and materials science, chemical, nuclear, radiological, training and exercise, health physics, directed energy, and astrophysics. We have utilized, on a surge basis, a number of experts in support of DIA, ranging from on-call employees to nationally recognized expert consultants.

OUTREACH AND INNOVATION ACTIVITIES

We help the Government identify various industry and academic entities in support of outreach and innovation activities. We have successfully worked outreach programs with industry and academia in support of innovative solutions for AR/VR, AI, and novel material solutions for chem/bio detection and collection systems. In addition, we have an extensive reach-back capability through industry and academic partners from which we can identify appropriate technical/SMEs based on mission objectives.



RAPID PROTOTYPING

ZelTech supports a DIA rapid prototyping shop where we provide subject matter and technical experts such as electrical engineers, mechanical engineers, software developers, computer scientists, biologists, material scientists, chemists, artificial intelligence/machine learning scientist, electronic technicians, machinists, logisticians, maritime boat captains, research divers, virtual/augmented reality developers, and test engineers. We either create entirely new solutions or improve upon systems previously purchased by the government in order to meet government requirements. We take systems from the prototyping stages, develop new hardware and software solutions, and help transition them to field and operational test. ZelTech provides a full range of services, to include test and operational support activities, and hands-on fabrication and modification of test items/platforms. We operate machine equipment, work with electronics and circuit boards, and perform precision measurements. Additionally, we provide Government project managers with technical advice in the form of technical summaries, reviews, reports and engineering presentations.



ZelTech provides a broad range of services to the 24th Analysis Squadron of the Air Forces Technical Applications Center (AFTAC) and its nuclear treaty monitoring mission. This includes health physics expertise to their radiation safety program where support to the development of radiological control procedures for laboratory operations includes: mitigation of incidents involving radioactive materials; performing area surveys, radioactive material accountability; radioactive waste and mixed waste operations; decommissioning activities, and actions to ensure the **As Low as Reasonably Achievable (ALARA)** concept is maximized.



We provide training and recommendations for diverse environmental materials and phenomenological modeling data support to include: integration of advanced technology sensor systems data into databases, models, simulations, presentations/visualizations and demonstrations; implementation and enterprise integration of high performance automated data processing systems; and data mining and data fusion methodologies from diverse data sources.

ZELTECH PROVIDED PHYSICS-BASED FIRST PRINCIPLES MODELING OF FAST-BREEDER REACTORS IN SUPPORT OF VARIOUS NUCLEAR MISSIONS.

We provided reactor modeling support through development and installation of the latest complete versions of reactor modeling software to include MCNP and deterministic codes. ZelTech has a strong presence in the AFTAC Ciambrone Radiochemistry Laboratory where we provide Laboratory Information Management Systems (LIMS) software development and testing as well as lanthanide high performance liquid chromatography (HPLC) support. We are an integral part of not only lab safety but operations as well. ZelTech also provides SETA support to technology initiatives at AFTAC in areas such as systems engineering, artificial intelligence, synthetic data generation, and new sensor technologies.

Expert Scientific and Analytical Support

capabilities, resources, and assets and delivered advanced detection and analysis methods, techniques, tools and systems. ESAS also supported the research and development of future systems and detection technologies to meet operational mission requirements for monitoring treaties and other-directed technology applications.

ZELTECH PROVIDES SCIENTIFIC, ENGINEERING, AND ANALYTICAL SERVICES

ZelTech support has ranged from basic R&D to software test and development. We helped develop the initial capability for a radio frequency (RF) ground-based, global sensor network for the persistent monitoring of low-level electromagnetic pulse (EMP) to help ensure foreign compliance with treaties and self-imposed testing moratoriums.

- ZelTech conducted research on commercial sources for an **RF ground-based, global sensor network for persistent monitoring of EMP, including an RF ground-based lightning detection system**. Our SMEs provided technical assessments of the potential sources along with recommendations. We developed all documentation including DoDAF 2.02 views and Concept of Operations (CONOPs) for potential operational scenarios and system capabilities based on the available commercial sources and current technology in RF detection and data processing. We also documented the functional operations, architecture, and design of the prototype. We used the acquired data streams and frequency bands and waveform discrimination methods consistent with AFTAC historic techniques to **develop near-real time detection and location capabilities**.
- ZelTech gave extensive assistance to the 24th Analysis Squadron's Modular Optimized Operational System (MOOS) R&D efforts. We provided **scientific and research support for the evaluation, integration, and exploitation of multiple phenomenology data and operational concept development**. We also provided data analysis requirements and algorithm integration support for software tool development. In addition, we supported **GUI development, algorithm development, and processing of change requests**.
- ZelTech provided the primary engineering support for the **development of all documentation/deliverables including software design descriptions (SDD), software product specifications (SPS), and software requirements specifications (SRS)**. We were also responsible for providing DoDAF conformance documentation/diagrams of all technology architecture products.

We provided subject matter experts and systems engineers in support of the AFTAC 23rd Analysis Squadron under the Expert Scientific & Analytical Support (ESAS) contract. ESAS augmented the AFTAC Atmosphere and Space Directorate's technical



Technical Nuclear Forensics Expertise

ZELTECH PERSONNEL PROVIDE A VARIETY OF TECHNICAL FUNCTIONS ACROSS THE TECHNICAL NUCLEAR FORENSICS (TNF) MISSION AREA.

- We provide operational knowledge in the field of nuclear analysis, serve as NTNf and AFTAC nuclear representative to interdepartmental and interagency meetings, and function as the NTNf and AFTAC focal point for all nuclear science related issues.
- ZelTech provides **operational technical expertise and recommendations** to the Government on all NTNf related nuclear science activities. In addition, we interface with other directorate SMEs to achieve AFTAC consensus on all NTNf developed technical documents, products or projects.
- Our personnel possess Department of Defense (DoD) exercise and operational expertise which we use to manage AFTAC involvement in local, Air Force (AF), DoD and national level exercises in preparation for real world event scenarios.
- To this end, we represent AFTAC at exercise planning sessions and working groups to ensure AFTAC participation is compliant with command AF, DoD and NTNf objectives. We ensure scheduled AFTAC responses represent realistic capabilities and timelines. We coordinate all exercise-related technical activities with the appropriate SMEs to ensure accuracy.
- Our personnel are knowledgeable of AFTAC laboratory analytical processes, procedures and data evaluation techniques essential to the domestic mission. We work with appropriate SMEs within AFTAC's technical directorates and NTNf interagency partners to improve and enhance the NTNf event response. We provide expert panel support through employees and consultants who are experts on nuclear matters in regards to AFTAC nuclear programs.

Expert Knowledge of the Nuclear Treaty Mission, Historic Data Systems, Data Analysis, and Nuclear Detection (NUDET) Systems in support of Prompt Diagnostic Programs and Projects.

- We provided technical expertise for satellite and sub-ionospheric sensor operations from detection to processing. We supported AFTAC and DTRA on both the Prompt Diagnostics Analysis of Alternatives (PD-AoA), Project Discreet Oculus (PDO), and USPDS programs to include planning, organizing, and evaluation of technologies under review in the AoA.
- We produced studies with critical evaluation of PDO systems supporting DTRA's R&D program. This included coordinating, consulting, and collaborating with subject matter experts (SMEs) from vendors, contractors, national labs, academia, and other organizations on a regular basis.

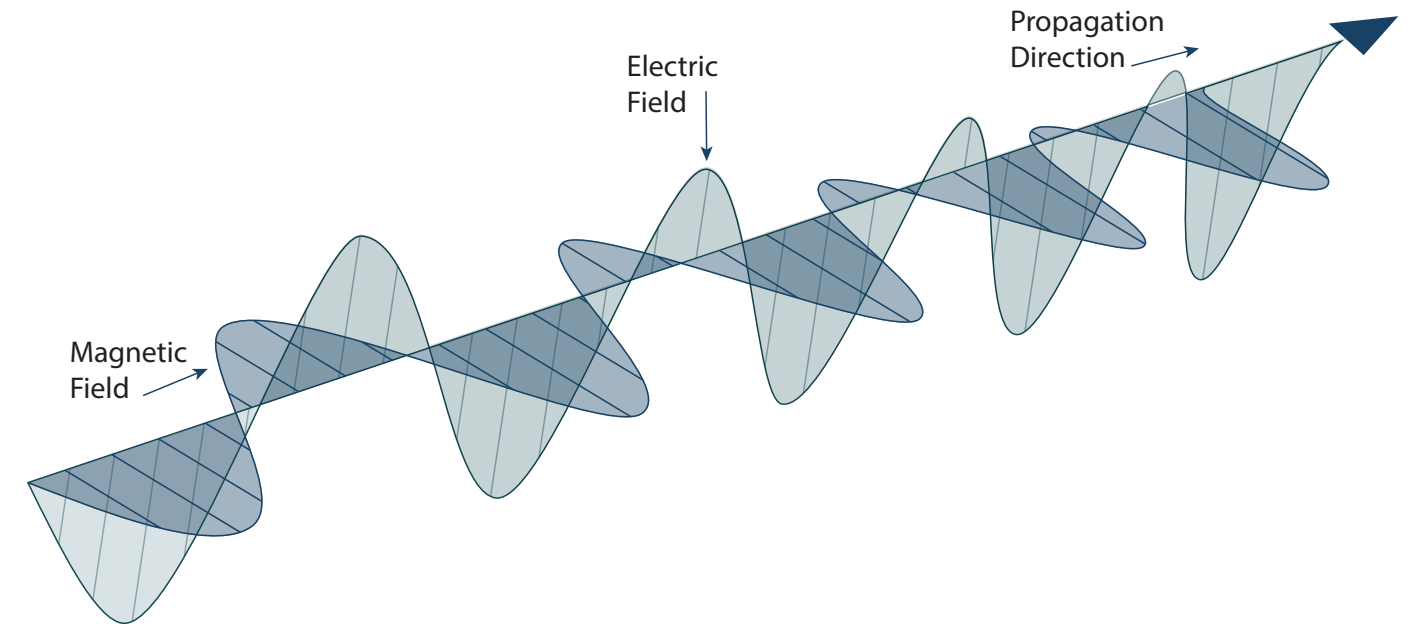
- We bring expert technical writing and administrative support to the AFTAC NTNF activities including DHS reporting, charter development, and technical studies. ZelTech provides AFTAC with data analysis from live sensor data feeds in cities from which we are developing R&D roadmaps, data ICDs, and operational impact assessments for our customer.

ZelTech provided subject matter expertise in the JCIDS process and support AFTAC Plans and Programs with the Prompt Diagnostics Analysis of Alternatives (PD-AoA) Joint Capabilities Integration Development System (JCIDS) process, the United States Prompt Diagnostic System (USPDS) transition, and Project Discrete Oculus (PDO) programs. Our Team developed and wrote the USPDS Capability Development Document (CDD) and is in the process of developing the Capability Production Document for AFTAC Plans and Programs. We are a key element of continuity in the USPDS program and provide the same level of expertise to the Harvester Particulate Airborne Collection System (PACS).

Expert exercise and Scientific support for Prompt Diagnostic (PD) and Technical Nuclear Forensics.

ZelTech SMEs function as NTNF Panel Experts and support modeling and simulation efforts within AFTAC for NTNF.

- We have a combined experience of over 50 years in nuclear weapons phenomenology, predictive modeling, and sensor performance assessments in the areas of treaty monitoring, nuclear forensics, and weapon effects.
- ZelTech's weapons effects support for AFTAC starts with our expertise in source modeling and ends with high-fidelity effects assessments applied to support their mission requirements.
 - We developed computational tools used to calculate peak overpressure along with time of arrival associated with airbursts as a function of range, yield, and height of burst; We addressed the effects of nuclear EMP through source region, total, and peak electric field strength calculations as a function of range and yield.
 - We have examined the feasibility of extracting weapon design information from measurements of the geomagnetic component of nuclear EMP and have developed new unfolding algorithms to take out sensor response, propagation effects, and source region effects for this purpose. These algorithms were applied to atmospheric test data and the results evaluated in the context of available weapon design information.
- In addition, we have also led the examination of ground asymmetry and geomagnetic radiated EMP components from modeled and measured data to further understand the limitations of extracting design information from ground based EMP measurements in complex environments.
- ZelTech provides consultant support in the technical area of urban Radiation Transport Modeling on NTNF. We provide Radiation Transport working group support as technical experts helping define and focus the needs of AFTAC and the NTNF mission. We provide expertise in different modern radiation transport models as well as data analysis from in-field sensors monitoring urban environments for prompt gamma emissions. We provide in-depth knowledge of the requirements for NTNF related modeling and simulation activities as a joint effort between the DOD, DOE and other forensic components.



ZelTech also possesses advanced expertise and unique modeling capabilities in lightning, nuclear weapon source terms, nuclear EMP, weapons effects, emplacement effects, and reactor burnup to include:

- MONTEBURNS AND REACTOR MODELING
- EMP RADIATION
- EMP SCALING LAWS
- MONTE CARLO TRANSPORT CODE
- KINETIC BOLTZMANN ELECTRON TRANSPORT CODE
- NUDET PHENOMENOLOGY MODELS AND SIMULATIONS WITH PARALLEL PROCESSING
- PROPAGATION MODELING
- 2-D FIRST PRINCIPLES LIGHTNING MODELING
- GAMMA RAY TRANSPORT IN AIR
- AIR FLUORESCENCE MODELING
- GROUND AND SPACE-BASED SENSOR MODELS
- SPACE WEATHER
- FULL DEVELOPMENT CAPABILITIES FOR JAVA, C++, C, FORTRAN, IDL, MATLAB, AND OTHER LANGUAGES

Our modeling and simulation capability is generated by highly skilled personnel who support emerging technologies development, system development, nuclear detection and forensics, and modeling and simulation. ZelTech has supported technology research and development through collaboration with industry, national and Department of Defense (DOD) laboratories and research centers, and academia for almost 20 years.

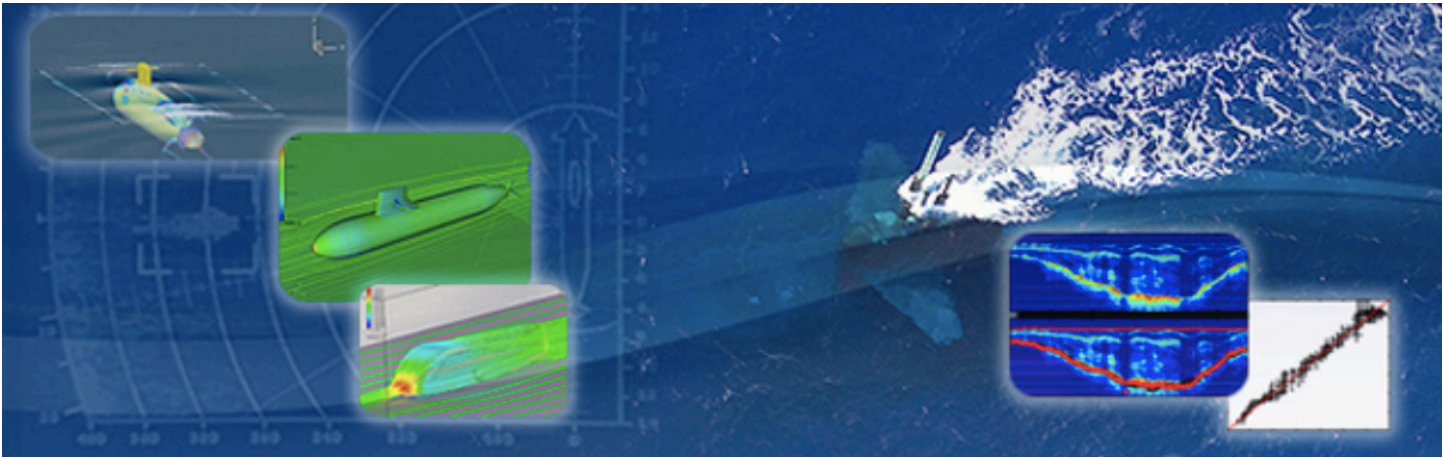
ZELTECH PROVIDES OPERATIONS AND MAINTENANCE (O&M) SUPPORT TO AFTAC IN THE AREAS OF COLLECTION AND ANALYSIS OF NUCLEAR PHENOMENA TO SUPPORT SOS AND SOL MISSION AREAS IN SUPPORT OF USPDS HEADQUARTERS FUNCTIONS AND SENSOR NODAL LOCATIONS.



Nuclear Operations

OUR TASKS:

- Provide SOL and SOS analysis of daily sensor and communication data feeds from fielded SOL and SOS sensors;
- Provide technical/subject matter expertise and perform data evaluation and analysis for SOL and SOS mission areas in the areas of nuclear forensics phenomena;
- Perform logistics management and integrated logistics support and equipment management;
- Provide administration of system architecture with expertise in Time Compliance Network Orders (TCNOs), Maintenance Tasking Orders (MTOs), and Command, Control, Communications, and Computer Notice to Airmen (NOTAM);
- Network Administration to support U.S. Air Force Information Assurance (IA) requirements and performance of procedures for information technology to ensure Computer Network Defense Service Provider (CNDSP) to ensure vulnerability analysis, malware notification and protection, and information assurance and compliance support;
- Software Engineering support to maintain evaluation and reporting tools as well as software that interfaces with sensors and communication systems at site locations and headquarters;
- Security administration to ensure compliance with operating system updates, patching/maintenance for remote device routing, log and problem monitoring;
- Configuration Management of system equipment, site installations, software, and its connectivity and network topology, ensuring that all support documentation is kept current with system architecture;
- Project Management to plan, initiate, track, and document the USPDS communications portfolio;
- Field maintenance, preventative maintenance, and system integration expertise with support for nuclear phenomena sensors, communications systems, and ancillary support field equipment. This includes system integration expertise of sensors, communication systems, and software.



HYDRODYNAMICS MODELING & SIMULATION AND ADVANCED SENSOR SUPPORT

The areas of research and development under this task order include multi-spectral electromagnetic and electro-optical propagation through atmospheric, marine, and land environments, as well as efforts associated with remote sensing technologies and sensor systems.

We focus primarily on non-traditional research and development in remote ocean sensing to substantially improve US anti-submarine warfare capabilities. This includes engineering investigations and subject matter expertise supporting peer reviews relating to electromagnetic wave propagation in relevant atmospheric and marine (oceanographic) environments.

The areas of research and development under this effort include multi-spectral electromagnetic and electro-optical propagation, as well as efforts associated with remote sensing technologies and sensor systems.

Specific scientific development and evaluation of remote sensing technologies includes radar, radiometry and wave propagation hydrodynamics. We provide recognized experts in oceanographic, hydrodynamic, atmospheric modeling and propagation theories to support semi-annual technical steering meetings that present recommendations on objectives, hypothesis development and test plans.

SETA Support

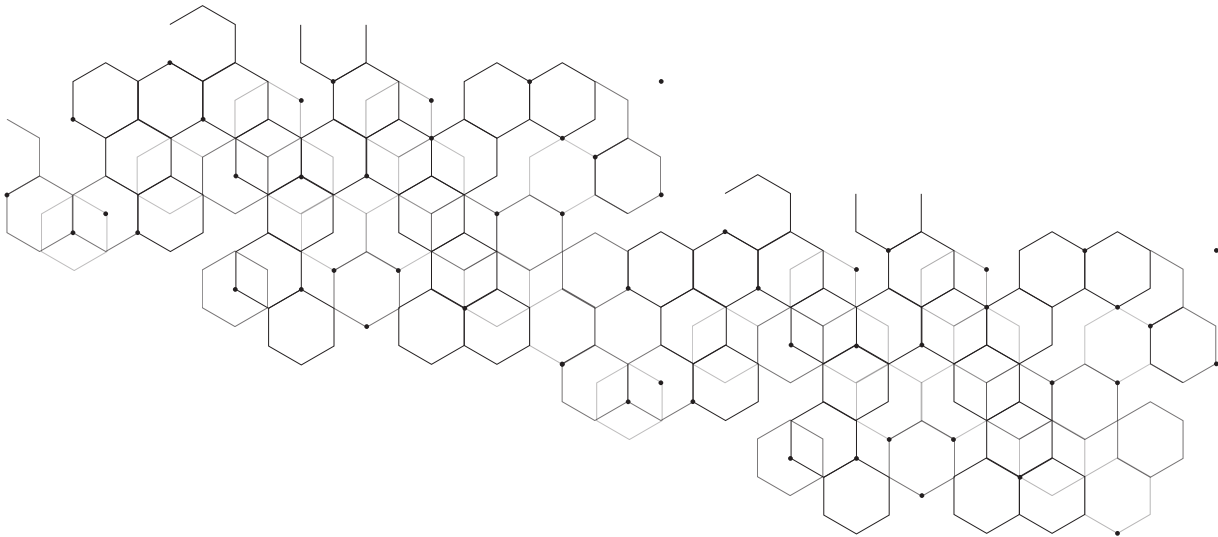
CYBER WEAPONS SYSTEMS

Our focus has been on Cyber Effects Operations and Cyber Effects Enabling Activities planning.

We supported many cyber organizations/stakeholders

(AFRL,JFHQ-CYBER/24 AF/AFCYBER, AFLCMC, USCYBERCOM, SAF, CCSO OFFICE , ACC A3256K, A5K, ARMY, ARMY JMOC AND SOMETIMES JOINT CYBER CELLS FROM COCOMS, AND THE AF STAFF)

– each of whom have their own demands. We primarily performed these tasks in conjunction with the 90th Cyberspace Operations Squadron.



Intelligence Community – Framework, Analysis, Cyber, & Exploitation

WE SUPPORT AFRL PROGRAM OFFICES WITH REVIEWS, TECHNICAL INTERCHANGE DISCUSSIONS, AND RESEARCH SUPPORT TO ACCOMPLISH ASSIGNED TASKS.

Cyber Proving Ground

PARTNER ENGAGEMENT, REQUIREMENTS ANALYSIS, & TRANSITION (PERAT)

ZelTech tasks included:

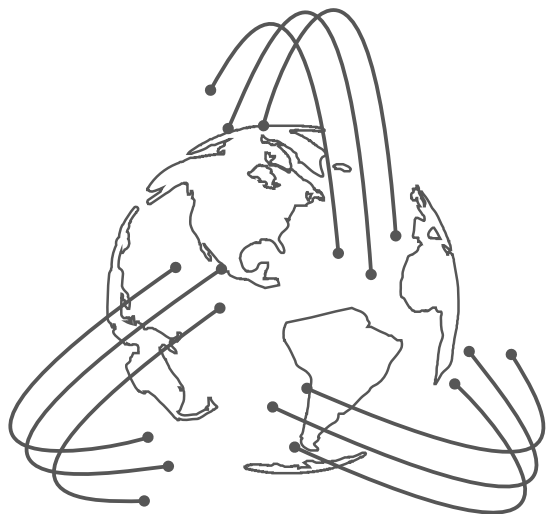
- Support the CPG in engagement, technical reviews, technical interchange discussions, and research necessary to accomplish assigned tasks.
- Engineering and project management support to mission partner engagement and requirements analysis of advanced cyber concepts and emerging technologies supporting the operational community by leveraging efforts across industry, academia, national laboratories, operators, and other visionaries.
- Engage industry, academia, national laboratories, operators, government partners, and other mission partners to create and maintain relationships to ensure the CPG has visibility of advanced cyber concepts and emerging cyber technologies.
- Monitor, identify, and technically evaluate advanced cyber concepts and emerging cyber technologies, methodologies, and processes that could provide utility and support to the operational community.
- Integration, test, and evaluation engineering advisement and support as required. Advise on integration plans along with test plans, procedures and reports to ensure the developed plans satisfy the requirements through test and evaluation cycles.

- Provide engineering support to requirements and system analysis and evaluation assessments of Intelligence Community (IC) R&D developed systems, Multi-INT Knowledge-based applications, and Service-based Architectures.
- Monitor, identify and evaluate world-wide state-of-the-art technology advances, methodologies, and processes that could impact Intelligence, Surveillance, Reconnaissance (ISR) operational capabilities.
- Conduct requirements and system-based engineering analysis on state-of-the-art technology to ensure the successful design and development of prototypes.
- Define networking, communication, and telecommunications capabilities necessary for prototypes.
- Identify and define the design, prototype, development, and delivery of necessary COTS hardware solutions.
- Provide integration, test, and evaluation engineering. Develop integration plans along with test plans, procedures and reports to ensure the developed plans satisfy the requirements through test and evaluation cycles.
- Provide analytical and business process support in the areas of engineering, concept development, and Technology Requirements Document (TRD) creation.

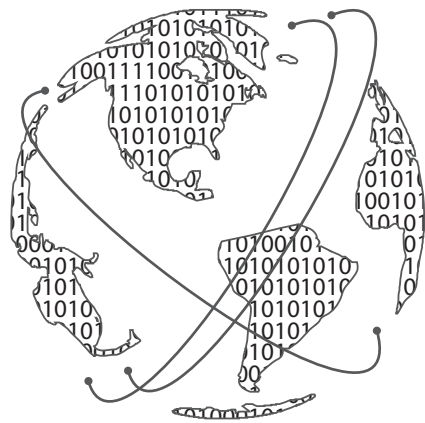
Cyber Test Support

GLOBAL OPERATIONS INNOVATION INITIATIVE (GOII)

- Provide input to the Cyber Science & Technology (CST CTC) AFRL/RIG Program Managers (PMs) in the execution of existing programs to ensure successful breakthrough technology demonstrations, help ensure technology transition, develop new ideas and programs and help promote AFRL/RIG CST CTC programs.
- Conduct assessments and evaluations of system requirements, system and subsystem trade studies, system design, development, testing and final demonstration.
- Provide input to the Government in the identification and validation of a set of attributes that support design concepts, performance evaluation and goal metrics to support the GOII program.
- Provide technical reviews, customer engagement, technical interchange discussions, and research necessary to accomplish assigned tasks.
- Provide engineering and project management support to mission partner engagement and requirements analysis of advanced cyber concepts and emerging technologies supporting the operational community by leveraging efforts across industry, academia, national laboratories, operators, and other visionaries.
- Engage industry, academia, national laboratories, operators, government partners, and other mission partners to create and maintain relationships to ensure RIG has visibility of advanced cyber concepts and emerging cyber technologies.
- Monitor, identify, and technically evaluate advanced cyber concepts and emerging cyber technologies, methodologies, and processes that could provide utility and support to the operational community.
- Review and validate proposed projects based upon potential to satisfy operational requirements, schedule and resource considerations, and system-based engineering analysis. Supplement existing documentation on CTS-GOII project review and validation processes as appropriate.
- Organize and execute cyber capability demonstration events to pair the operational community with emerging cyber concepts and technologies across industry, academia, national laboratories, operators, and other visionaries.



ASSESSING CURRENT AND EMERGING CYBER TECHNOLOGIES



Cyberspace Operations Capabilities

Promote these capabilities across the Air Force, other services, Department of Defense (DoD), Intelligence Community (IC), operational partners, and acquisition programs to understand, identify, and document operational demands and capability gaps and technology gaps within acquisition programs of record; includes attendance and participation in operational exchange meetings, other technical exchanges, and industry days where these stakeholders present this information. In addition, collaborate across AFRL, other service, DoD, and IC research programs to understand, identify, and document specific technical objectives of research programs with enough fidelity to determine applicability of these research programs to operational capability gaps or technology gaps within acquisition programs. This includes attendance and participation in principal investigator and other technical exchange meetings where these programs are briefed and discussed.

- Based on breakthroughs within research and development programs, understand, document, and advocate future technology or operational roadmaps. Possess an understanding and appreciation of divergent demand signals between various stakeholders and use this knowledge and experience to broker initial and continuing discussions between research programs, acquisition programs, and operational end users with the goal of transitioning technologies from research programs in to sustained operational capabilities.
- Develop Research and Development (R&D) plans, technical and administrative schedules, risk assessments, end user impact test plans, and testing and certification plans (to include Evaluated Level of Assurance (ELA) testing) for technologies and capabilities being researched and developed at AFRL and other R&D partners.
- Identify and analyze existing technologies for potential applicability to AFRL programs and mission areas. Assess current and emerging Cyber technologies that will have a direct impact on future R&D planning and execution. These technologies will come from all potential sources and include, but are not limited to: Government Off the Shelf (GOTS), Commercial Off The Shelf (COTS), Internal Research and Development (IRAD) developed, and Government sponsored and developed technologies.
- Manage development of technical concepts for AFRL's Satellite Hacking Capture the Flag (CTF).

Threat Reduction

RESEARCH AND DEVELOPMENT/SCIENCE AND TECHNOLOGY (R&D/S&T) SUPPORT

DTRA is the lead DoD organization focused on the Counter-Improvised Explosive Device and Counter-Unmanned Aircraft System mission encompassing research, experimental development, science, and technology support services. ZelTech supported DTRA to execute a rapid and agile threat-based acquisition approach with the ability to anticipate/understand capability gaps, and identify and deliver rapid solutions.

We also help DTRA sustain systems and processes to integrate and coordinate other agency research and experimental development activities to provide value in obtaining technology or doctrine to counter developing threats.

PROVIDING ALL DTRA ORGANIZATIONAL UNITS WITH ADVANCED EXPERT TECHNICAL ASSISTANCE BY CONDUCTING RESEARCH AND DEVELOPMENT, ADVANCED SYSTEMS ENGINEERING, PROTOTYPE EVALUATION IN THE PHYSICAL, ENGINEERING, AND COMPUTER SCIENCES AS WELL AS SUBJECT MATTER EXPERTISE FOR OPERATIONS AND INTELLIGENCE SUPPORT WHICH INCLUDES DEPLOYMENT TO OCONUS LOCATIONS AND HAZARDOUS DUTY/COMBAT ZONES.

Our SMEs use fundamental concepts, practices, and procedures of the scientific fields to perform research tasks evaluating emerging technologies, applicable to improvised threat defeat operations. Efforts by other Government entities are analyzed, and evaluated for applicability, and recommended to DTRA as potential initiatives to support the mission.

Technical Red Team analysis support for counter-improvised threat acquisition efforts for elements of DoD and other Government agencies such as:

- DHS, TRANSPORTATION SECURITY ADMINISTRATION
- FEDERAL BUREAU OF INVESTIGATION
- BORDER PATROL
- IMMIGRATION AND CUSTOMS ENFORCEMENT
- UNITED STATES COAST GUARD

Technical Red Team assistance for Combatant Command's mission planning, law enforcement exercises, and other DoD and non-DoD response planning activities and exercises including the design, construction/production, inventory management, and distribution of surrogate threat devices used for training and testing at counter and defeat improvised threat test events. Our DTRA Analysts perform research and analyses of all-source data derived from, but not limited to, multiple and specialized databases, and prepare issue papers and recommendations based on analysis.

Space Systems, Operations
Research & Development

Providing
Services
Above &
Beyond





Space System Capability Experience

- Engineering expertise for applications of space systems for technology development. Space systems include the design, development, test, and operations of ground and space-based systems for communication and sensing purposes.
- Space systems engineering activities to analyze user requirements and operational capabilities and constraints, define objectives and develop concept and system performance levels and constraints.
- Space support for planning, programming and budgeting activities, coordinating, managing logistics, operator training and general execution of customer tests, evaluations, exercises, training and operational fielding.
- Conduct market analyses to evaluate maturity and suitability of potential technology solutions to satisfy documented capability needs.
- Develop technical documents supporting development, acquisition, and integration programs.
- Perform systems analysis activities to analyze requirements, define space technology objectives, and develop concept and system performance levels.
- Provide scientific and engineering support to customer research and development (R&D) and operations and maintenance (O&M) efforts with specialized expertise in Radar, Radiofrequency (RF), Electro-Optical (EO) and Laser with emphasis on land-based systems.
- Expertise in High Frequency (HF) over-the-horizon radar (OTHR) to include planning, programming, and executing advanced HF OTHR R&D projects covering advanced waveforms, signal processing algorithms, target detection and tracking, digital receivers, solid-state high-power amplifiers, and HF OTHR and line-of-sight antennas.

We provided subject matter experts and systems engineers in support space systems and operations through a myriad of highly technical analysis and advanced scientific research and development capabilities.

- EO Engineering expertise supporting principles & theories involved in the design, implementation and utilization of advanced operational EO and laser systems as well as a thorough understanding of the principals involved in the detection and identification of these systems with an emphasis on remote data acquisition and gathering.
- Analysis of alternatives and trade studies to develop and recommend technical approaches and plans to develop, demonstrate and field technical collection capabilities that are responsive to validated user requirements.
- ZelTech provides modeling and simulation (M&S) and analysis expertise with unique capabilities related to radiation and other space weather effects on both ground and space-based systems:
 - Systems include space-based sensors and data transmission and reception capabilities
 - Space weather, environment and related physics (gamma, neutron, x-ray, etc.)
 - Studies supporting analysis of the space environment and space situational awareness as well as studies of atmospheric impacts to space systems.



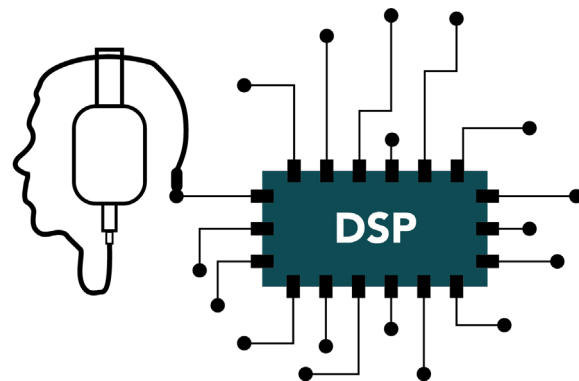
Audio Engineering to Support
Immersive and Complex
data processing

Audio Processing Services

ZELTECH OFFERS
EXPERTISE IN AUDIO
ENGINEERING
FACILITATING,
PRODUCING,
RECORDING, EDITING,
MIXING, MASTERING
IN A BROAD RANGE
OF RECORDING
ENVIRONMENTS
TO SUPPORT
IMMERSIVE SYNTHETIC
ENVIRONMENTS AND
COMPLEX AUDIO DATA
PROCESSING.

We provide expertise in:

- Digital Audio editing and Phase Correction
- Audio Restoration and Forensics
- Console operation and external hardware (Gain staging)
- Passive and Active Equalization
- Recording Studio wiring, Signal Flow/Routing, Patchbay set-up and design and Digital Audio Workstation optimization (Mac/PC)
- Signal flow and digital audio workstation troubleshooting (ASIO and Latency optimization)
- A/V synchronization (MIDI/SMPTE Timecode)
- Sound Design, Automatic Dialogue Replacement (ADR)
- Analog to Digital Converters (ADC)/Digital to Analog Converters (DAC) upsampling/downsampling /dither/anti-aliasing/bit rate and batch processing



- IR Impulse, Algorithmic and Hardware Emulation modeling and creation
- Loudness optimization for streaming algorithms and tangible media (True Peak, RMS, LUFS/LKFS, VU, Bit Depth, Fletcher Munson, EBU-compliant)
- Mono, Stereo, Immersive, 1st-3rd Order Ambisonics, Biaural, Dolby Atmos and other multichannel format (Amazon AWS and Netflix ADM deliverable formats)
- VST3, AU, AAX Plugin Beta-Testing (to many to list)
- Recording (Live Instrumentation, MIDI, Artist and Podcast/Voiceover talent)
- Studio Design, Sound Reinforcement, Monitor Calibration and Acoustic Treatment/Correction
- Advanced Power User in all Steinberg Products (Nuendo Pro, Cubase Pro and Wavelab Pro)





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