



Brief Overview of Technical Committees

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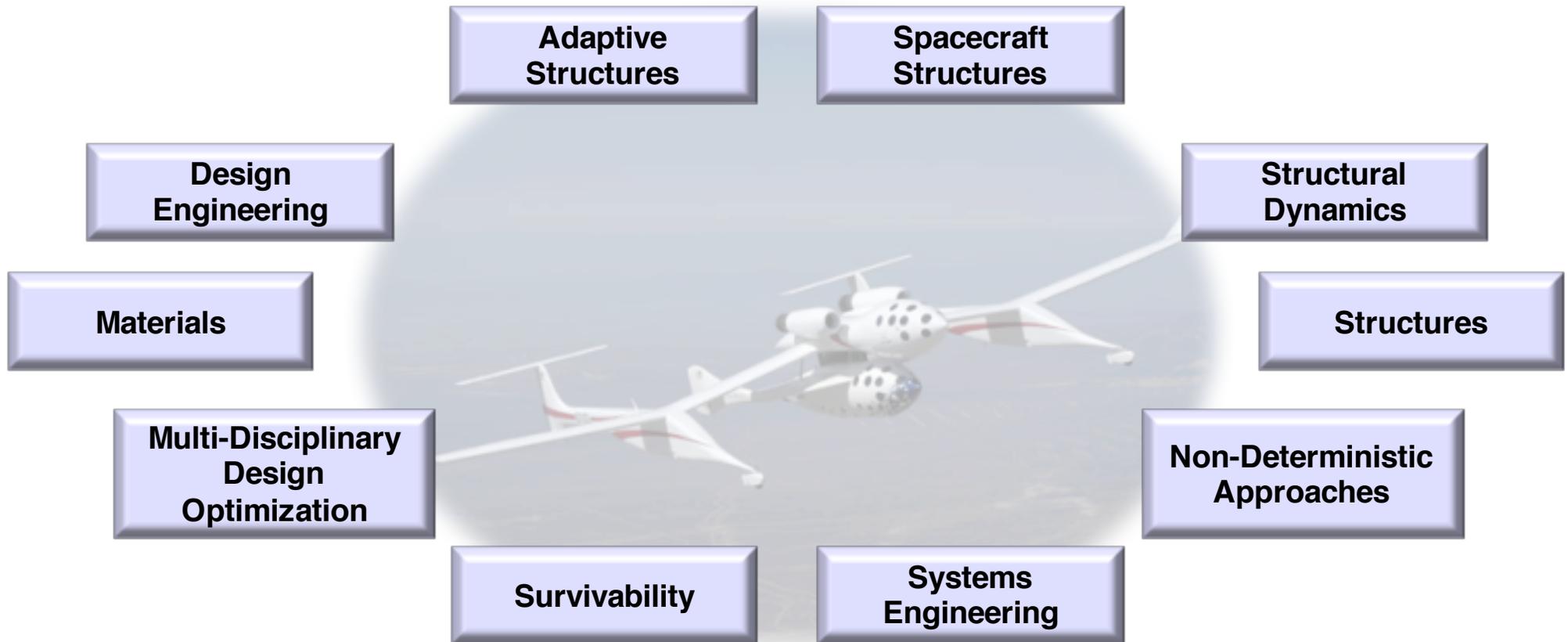
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TCs in Aerospace Design & Structures Group



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Brief Overview of TCs in AD&S Group

Adaptive Structures: Autonomous structural systems with sensors, processor, and actuators to enable adaptation to changing environmental conditions.

Design Engineering: Promotion of the development and dissemination of design technologies to assist the design engineer in creating and defining practical aerospace products.

Materials: Systematic application of materials to aerospace systems, and interdisciplinary approach to the development, testing, and evaluation of different materials and associated technologies.

Multidisciplinary Design Optimization: Dissemination of the development, application, and teaching of a design methodology integrating disciplinary analyses, optimization, and AI in design of aerospace systems.

Non-Deterministic Approaches: Advancing the relevant art, science and cross-cutting technologies required for the successful application of non-deterministic approaches to aerospace systems.

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Brief Overview of TCs in AD&S Group

Spacecraft Structures: Challenges of design, analysis, fabrication and testing of structural systems that operate in space based environments, including their ground testing under various loading conditions.

Structural Dynamics: Interaction of aerodynamic, dynamic, elastic, damping, inertia, and control forces acting on vehicle structures, including evaluation of linear/nonlinear systems using different techniques.

Structures: Development and application of theory, experiment, and operation in design of aerospace structures, including requirements in structures technology, environment, loads, materials. and processes.

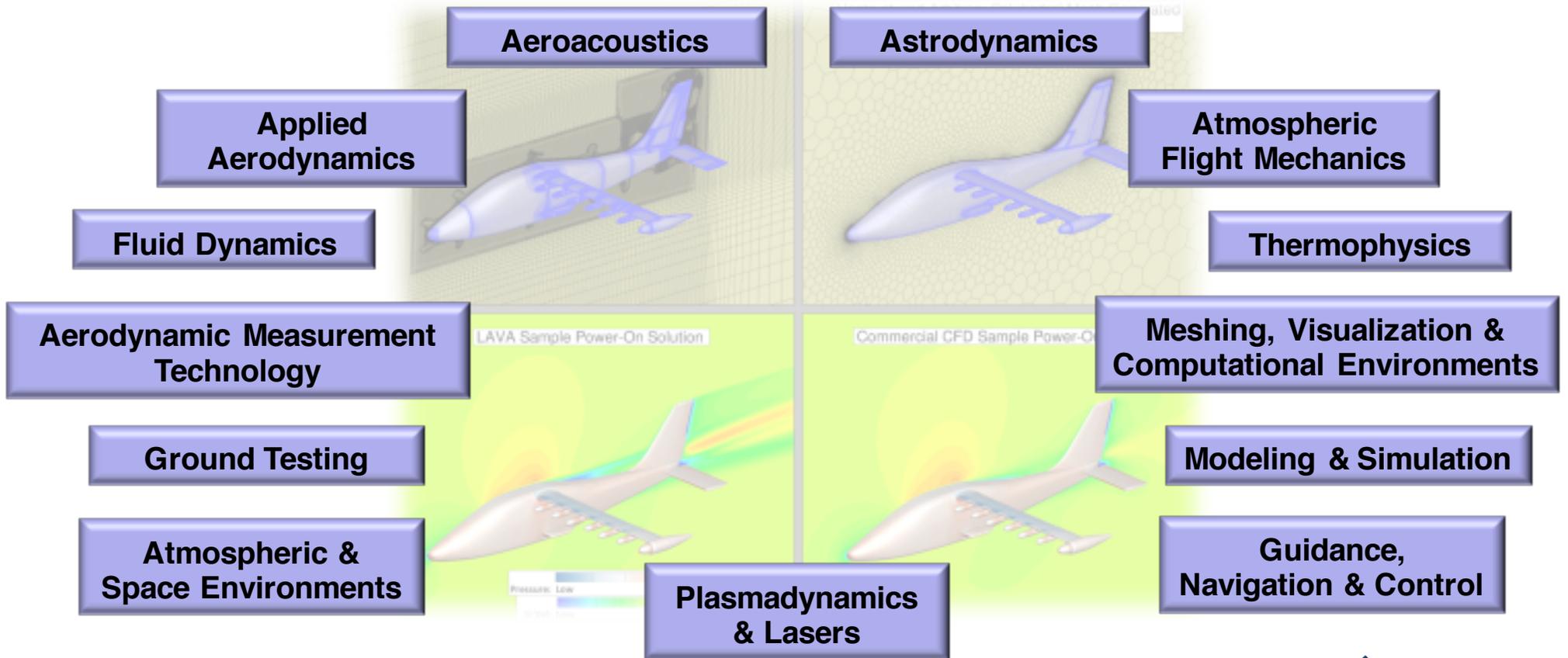
Survivability: Promotion of survivability as a design discipline, including both the survivability assessment methodology and the survivability enhancement technology, for air and space systems.

Systems Engineering: Fostering the definition, dissemination, development, understanding and application of system engineering processes, methodologies and tools to aerospace, computer, and ground systems.

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TCs in Aerospace Sciences Group



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Brief Overview of TCs in AS Group

Aeroacoustics: Physics of noise due to motion of fluids and bodies through the atmosphere and by chemical reaction processes, including the response of humans and structures to aerodynamic noise.

Aerodynamic Measurement Technology: Advanced measurement techniques for aerodynamic research in flight and ground-based facilities, including surface and flow field measurements and visualization.

Applied Aerodynamics: Aerodynamics of vehicles, including the development, application, and evaluation of aerodynamic concepts and methods through correlation with theory, wind-tunnel, and flight-test data.

Astrodynamics: Determination, prediction, adjustment, and optimization of trajectories in space, including navigation and mission analysis, perturbation theories and expansions, and spacecraft attitude dynamics.

Atmospheric and Space Environments: Exchange of information and advance of knowledge concerning all relationships and interactions between aerospace systems and the atmospheric environment.

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Brief Overview of TCs in AS Group

Atmospheric Flight Mechanics: Aerodynamic performance, trajectories, and attitude dynamics of vehicles moving through planetary atmospheres, including aircraft, spacecraft, boosters, and entry vehicles.

Fluid Dynamics: Behavior of liquids and gases in motion, including momentum and energy transport phenomena and their influence on the behavior of fluids, the forces and moments on objects.

Ground Testing: Testing of vehicles, structures, and aerospace systems, subsystems, and components in ground-based facilities such as wind tunnels, environmental facilities, and engine test facilities.

Guidance, Navigation, and Control: Advance the technology and facilitating the theoretical and practical consideration of techniques, devices and systems for the navigation, guidance and control of flight vehicles.

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Brief Overview of TCs in AS Group

Meshing, Visualization, and Computational Environments: Application of computer science to pre- and post-processing, and infrastructure in support of computational simulation in the Aerospace Community.

Modeling and Simulation: Simulation of atmospheric and space flight conditions in ground-based simulators and aircraft for aircrew training, design, development, and evaluation of aerospace systems.

Plasmadynamics and Lasers: Physical properties and dynamic behavior of fluids in states of ionization and/or population inversion, with emphasis on important applications in aerospace and energy.

Thermophysics: Study and applications of the properties and mechanisms involved in thermal energy transfer and storage in gases, liquids, and solids, or their combinations, including environmental effects.

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TCs in Aircraft Technology, Integration, & Operations Group

Aircraft Operations

**Air Transportation
Systems**

Aircraft Design

Balloon Systems

Flight Testing

General Aviation

**Aerodynamic
Decelerator Systems**

**Electrified Aircraft
Technology**

**Lighter-Than-Air
Systems**

HyTASP

**V/STOL Aircraft
Systems**

Product Support

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Brief Overview of TCs in ATIO Group

Aerodynamic Decelerator Systems: Development and application of aerodynamic deceleration systems and lifting parachutes, pararotors, and inflatable decelerators, sustentation, and landing of vehicles.

Air Transportation Systems: Development of improved air transportation systems and to study the impact of developments in aerospace technology on these systems.

Aircraft Design: Design and optimization of complete aircraft systems, including analysis of their future potential.

Aircraft Operations: Safe and efficient aircraft operations by facilitating communication and interchange of concerns, ideas, and initiatives throughout the airspace system user community and government agencies.

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Brief Overview of TCs in ATIO Group

Balloon Systems: Development and application of free floating balloon systems as well as the technologies necessary to achieve buoyant flight in stratospheric and planetary atmospheres.

Electrified Aircraft Technology: Advancement of electrified aircraft systems, and application of key technologies, including integration of electrified powertrains, distribution of power, safety and airworthiness.

Flight Testing: Testing of aircraft, spacecraft, and missiles in their natural environment with regard to research, development, acceptance, and operational testing of these craft and/or associated equipment.

General Aviation: Fostering research and development related to general-aviation technologies and systems, including support systems and safety, and addressing airport and airspace issues.

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Brief Overview of TCs in ATIO Group

Hypersonic Technologies and Space Planes (HyTASP): Ensuring hypersonics knowledge base, including ground- and flight-testing, flourishes and leads to expanded market opportunities in the 21st century.

Lighter-than-Air Systems: Advancing lighter-than-air vehicle systems for transport, surveillance, and utility applications with emphasis on the technical disciplines related to dirigible types, hybrids, and derivatives.

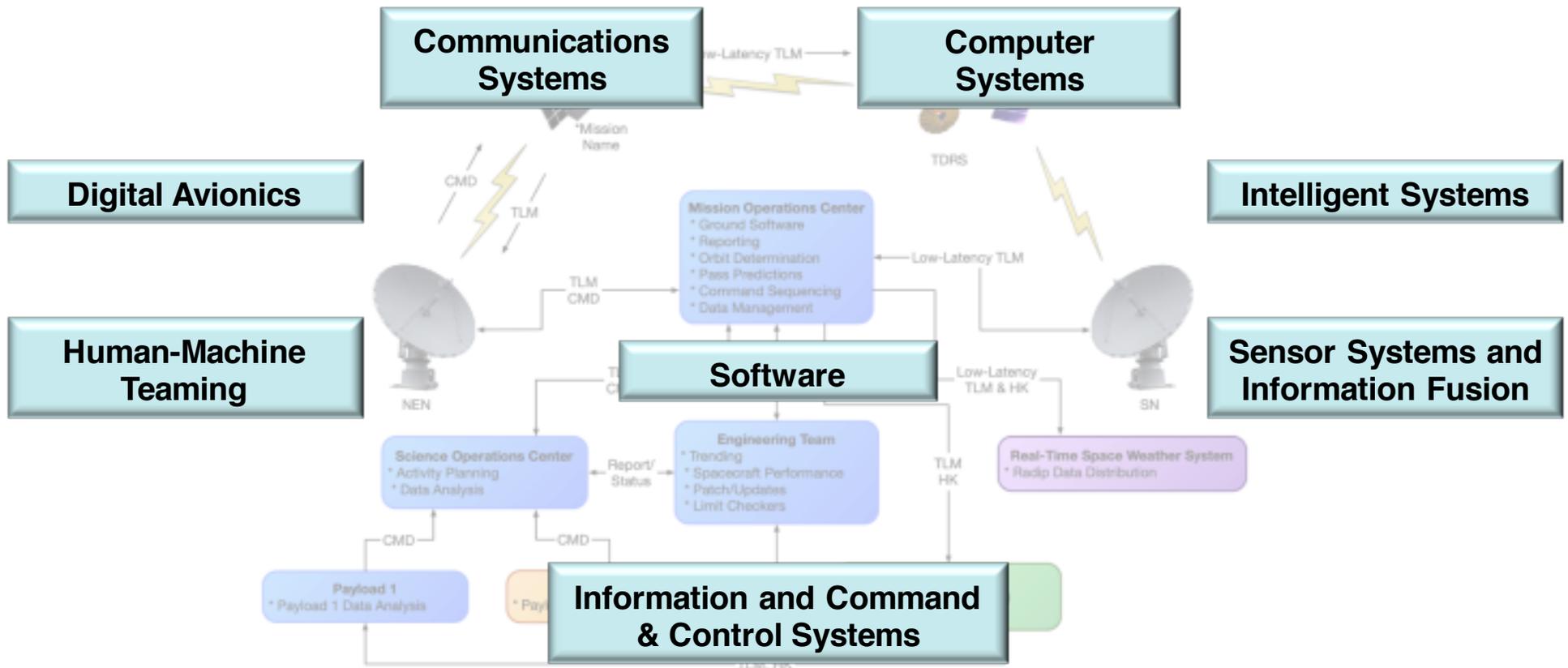
Product Support: Advancing aircraft logistics and support systems in engineering and supply support, reliability-based logistics, aircraft maintenance, mod and repair, reliability, and aircraft integrity programs.

V/STOL Aircraft Systems: Advancing the arts, sciences, and technology applied to design and operation of VTOL and STOL aircraft systems, including lift and attitude control systems, and airframe configurations.

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TCs in Information Systems Group



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Brief Overview of TCs in IS Group

Communications Systems: Development, application, and operation of communications systems for point-to-point, mobile, aeronautical, maritime, and space users.

Computer Systems: Theoretical and practical considerations involving the applications of computers and information processing techniques to aerospace programs.

Digital Avionics: Development, application, and operation of digital avionics systems and technology for military and commercial aerospace systems.

Human-Machine Teaming: Foster the community, methodologies, and technologies that will enable safe, trusted, and effective integration of humans and complex machines in aerospace and related domains.

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Brief Overview of TCs in IS Group

Information and Command and Control Systems: Integrated application of data acquisition, assessment, and dissemination functions required for timely and efficient command and control of aerospace assets.

Intelligent Systems: Application of Intelligent System technologies and methods to aerospace systems, the verification and validation of these systems, and education in the use of IS technologies in aerospace.

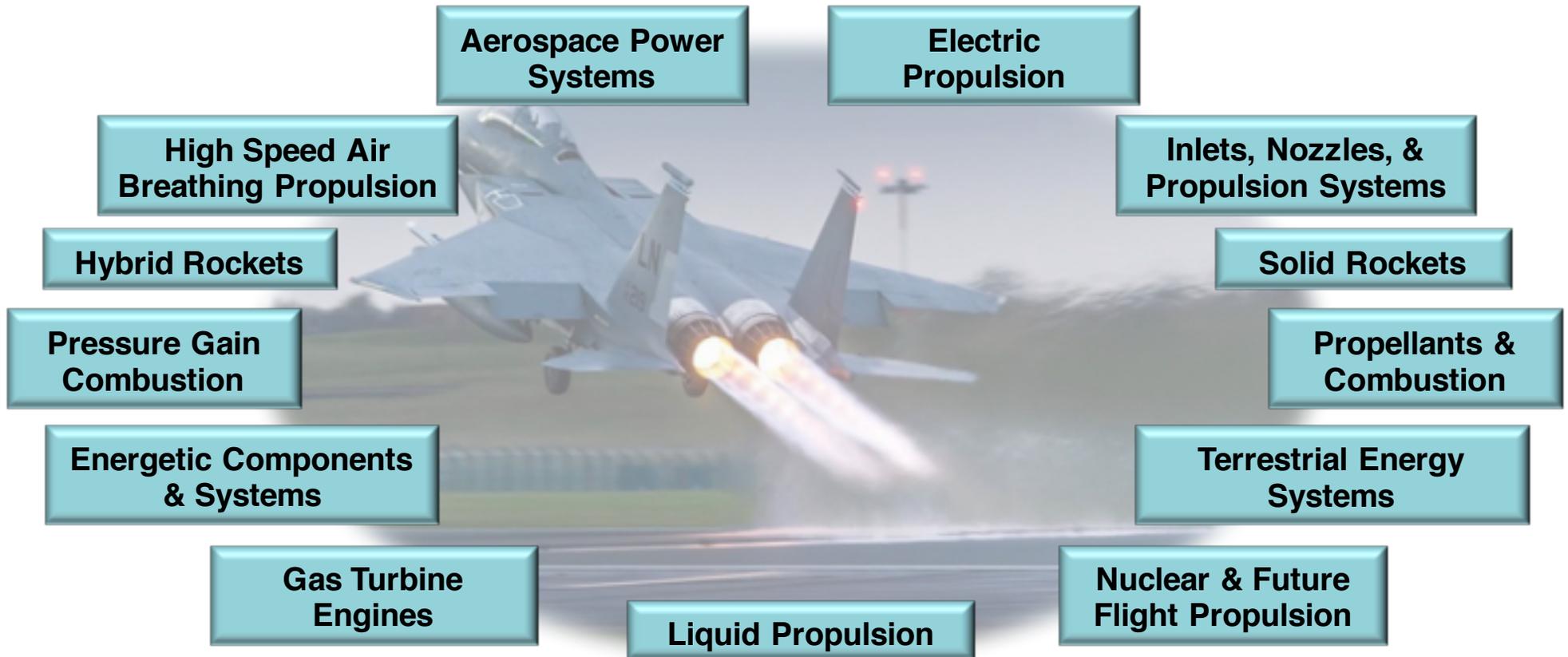
Sensor Systems and Information Fusion: Sensor systems and distributed sensor networks for detection, collection, information fusion, storage, retrieval, distribution, and reception of information at various levels.

Software: Software engineering issues for complex and critical systems, including software requirements, design, code, test, evaluation, operation and maintenance.

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TCs in Propulsion & Energy Group



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Brief Overview of TCs in P&E Group

Aerospace Power Systems: Application of science and technology to provision of power from chemical, solar, and nuclear energy sources for spacecraft, aircraft, and missiles.

Electric Propulsion: Research, development, and application of electric propulsion devices, subsystems, and systems for auxiliary and primary propulsion for satellites and spacecraft.

Energetic Components and Systems: Design, development and testing of energetic components and system integration into civilian and military applications.

Gas Turbine Engines: Mechanical design, fluid mechanics and thermodynamics applied to the science and technology of air vehicle gas turbine engines and engine components.

High Speed Air Breathing Propulsion: Mechanical design, fluid mechanics and thermodynamics applied to the science and technology of systems that enable supersonic and hypersonic air vehicle propulsion.

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Brief Overview of TCs in P&E Group

Hybrid Rockets: CFD, thermodynamics, heat transfer, structural mechanics, performance, fabrication, processing, and system integration techniques in design and test of rocket motors with hybrid rocket systems.

Inlets, Nozzles, and Propulsion Systems Integration: Mechanical design, fluid mechanics and thermodynamics applied to the science and technology of air vehicle propulsion and power systems integration.

Liquid Propulsion: Application of mechanical design, fluid mechanics, and thermochemistry to the technology of reaction propulsion employing liquid or gaseous propellants.

Nuclear and Future Flight Propulsion: Physical mechanisms and associated technologies for the implementation and design of nonchemical, high energy propulsion systems excluding electric thrusters.

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Brief Overview of TCs in P&E Group

Pressure Gain Combustion: Development and application of pressure gain combustion technologies for improving propulsion and power generation systems and achieving new mission capabilities.

Propellants and Combustion: Physics and chemistry of reactants and working fluids for reaction propulsion, including properties of propellants, aerothermodynamics processes, and thermal energy conversion.

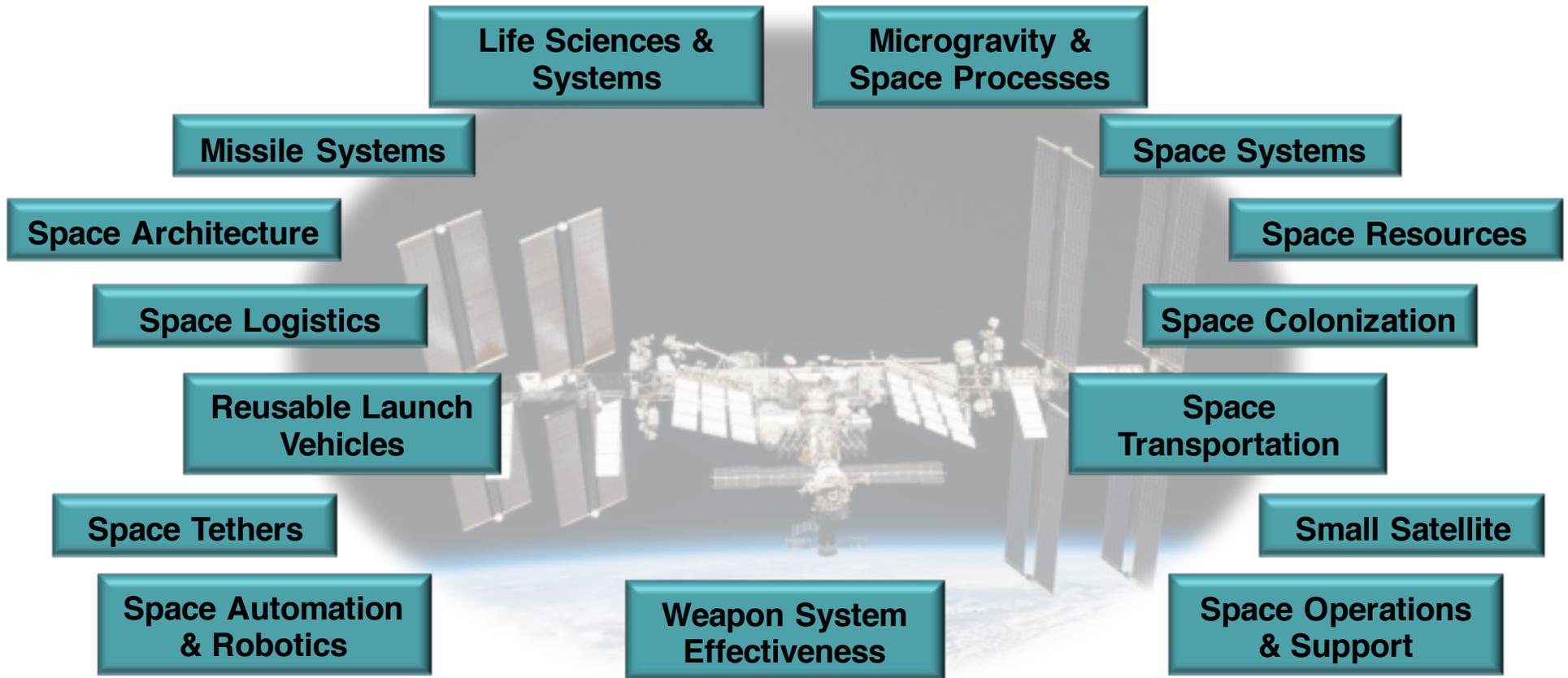
Solid Rockets: Application of fluid dynamics, thermodynamics, heat transfer, structural mechanics, fabrication, and processing techniques to the design of rocket motors and associated pyrotechnics.

Terrestrial Energy Systems: Application of engineering sciences and system engineering to the production, storage, distribution, and conservation of energy for terrestrial uses.

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TCs in Space & Missiles Group



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Brief Overview of TCs in S&M Group

Life Sciences and Systems: The advancement of the science and technology related to the requirements for, and the utilization of, humans in the design and operation of marine, surface, aero, and space systems.

Microgravity and Space Processes: Professional advancement and public awareness of microgravity and space processing in the physical, materials, and biological sciences and related applications.

Missile Systems: Rationale for development and operation of tactical and strategic, offensive, and defensive missile systems.

Reusable Launch Vehicles: Foster interaction and integration across technical disciplines and assure timely dissemination of results from national and international R&D efforts supporting RLV development.

Small Satellite: Small satellites and related and supporting technologies, applications and missions, including MicroSats, NanoSats, CubeSats, and related supporting systems and technologies.

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Brief Overview of TCs in S&M Group

Space Architecture: Architectural design of living environments in space related facilities, including space vehicles, stations, habitats, lunar and planetary bases, and earth-based simulation and test facilities.

Space Automation and Robotics: Automation and robotics in space program applications including design, development, fabrication, application, and operation of SAR systems, and human-machine interfaces.

Space Colonization: Promote the identification and development of advanced concepts, science, and technology that will support, enhance and enable permanent human presence in space.

Space Logistics: Development of integrated space logistics capabilities for spacefaring operations, including innovative logistical architectures and related system concepts to support future mission planning.

Space Operations and Support: Operations and technology developments for crewed and uncrewed missions in earth orbital and planetary operations, and issues associated with space operations and support.

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Brief Overview of TCs in S&M Group

Space Resources: Development of concepts, science, technology, and systems to support, enhance and enable the identification, verification, recovery, and use of space resources on the Moon and beyond.

Space Systems: Foster the development, application, and operation of general space systems, and address and provide informed positions on emerging space system issues.

Space Tethers: Application and development of space tethers including electrodynamic tether propulsion, tether-based momentum transfer systems and space structures and related systems and technologies.

Space Transportation: Foster continuous improvements in existing space transportation systems, access the impact of new technology for the next generation of space transportation systems and applications.

Weapon System Effectiveness: Develop and promote the science and technology of predicting, measuring, evaluating, and improving the lethality, or effectiveness, of weapon systems.

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More Information & Contacts

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