



Energetic systems and effects

Next generation game-changing technologies

DST is an international leader in energetics and high speed systems, advanced modelling, experimentation, and flight testing.

Outcomes for Defence

DST's energetic systems and effects research program enables critical science and technology to enhance, shape and transform ADF warfighting capability. DST has an excellent record in delivering high impact outcomes for Defence.

Academic and industry partnerships create new opportunities to jointly progress and transition next generation technologies into even more significant game-changing Defence and national security outcomes.

Significant programs

- High speed weapons
- Active protection systems
- Collaborative and cognitive weapons
- Weapons technical intelligence
- Counter improvised threats
- Current and planned force weapons
- Transformative energetics and weapons.

Partnering opportunities

DST seeks academic and industry partners who wish to perform collaborative research in energetic systems and effects. This includes technology development and transition from concept, through demonstration, into ADF warfighter capability. Specific areas of research interest include:

- **Explosives and pyrotechnics** – Nano-energetic materials processing and characterisation; the detection, identification, attribution and neutralisation of improvised explosives; additive manufacturing of pyrotechnic materials; and modelling of detonation phenomena.
- **High speed systems** – Hydrocarbon fuel modeling for supersonic flow; high temperature aero-structural materials; manufacturing and integration processes; high speed vehicle mission and safety systems development, certification and accreditation.
- **Warheads and effects** – 3D physics-based modelling of shock interactions for target effects; very high speed target impacts; and developing high strain rate material models.
- **Weapons propulsion** – computational geometry methods for 3D printed propellants; additive manufacture of solid propulsion systems; military responsive space access; and non-invasive diagnostic technologies.

DST is also interested in identifying specialised test and evaluation capabilities relevant to this work area, and exploring models for shared use and operation of infrastructure.

For more information contact:

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