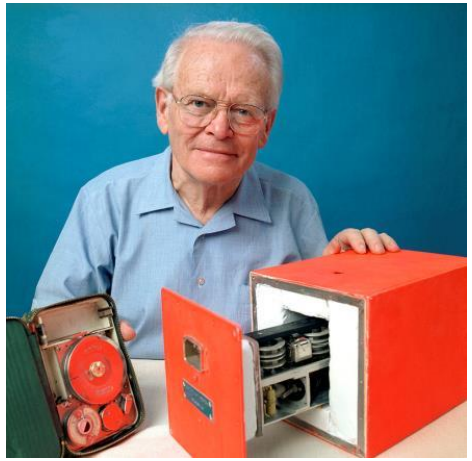
Australian Government
Department of Defence

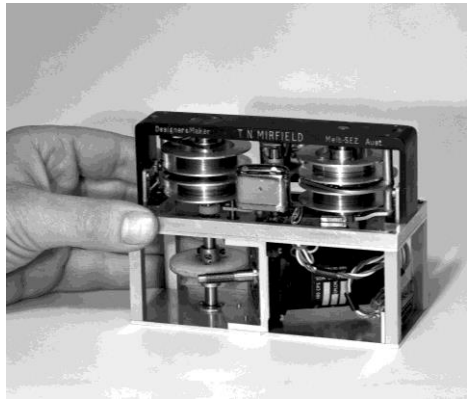
Defence Science and Technology Group

Dr Damian Marinaro
Land Division, Defence Science and Technology Group

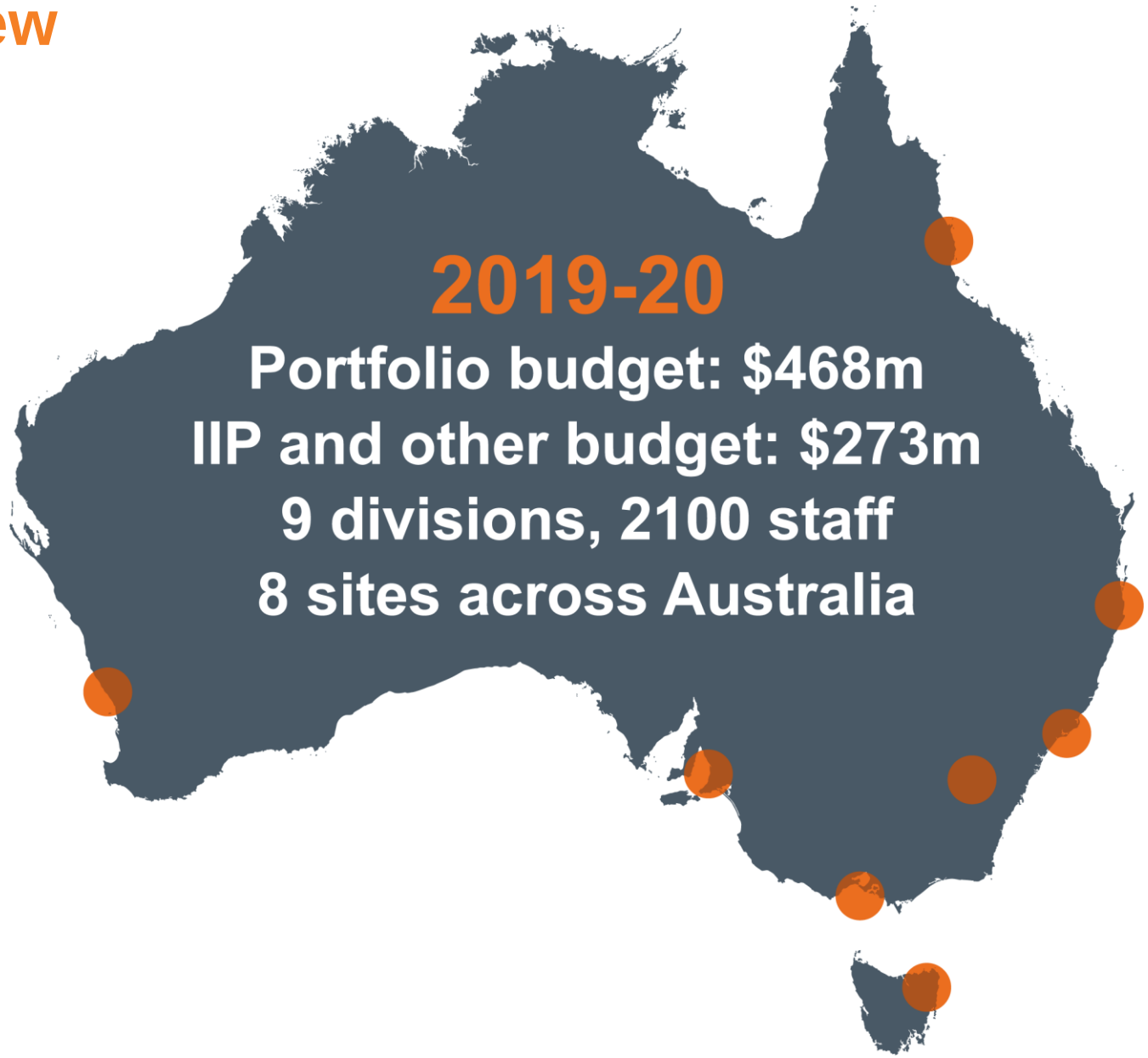
Who is Defence Science and Technology Group?

‘Black Box’ flight recorder





DSTG overview



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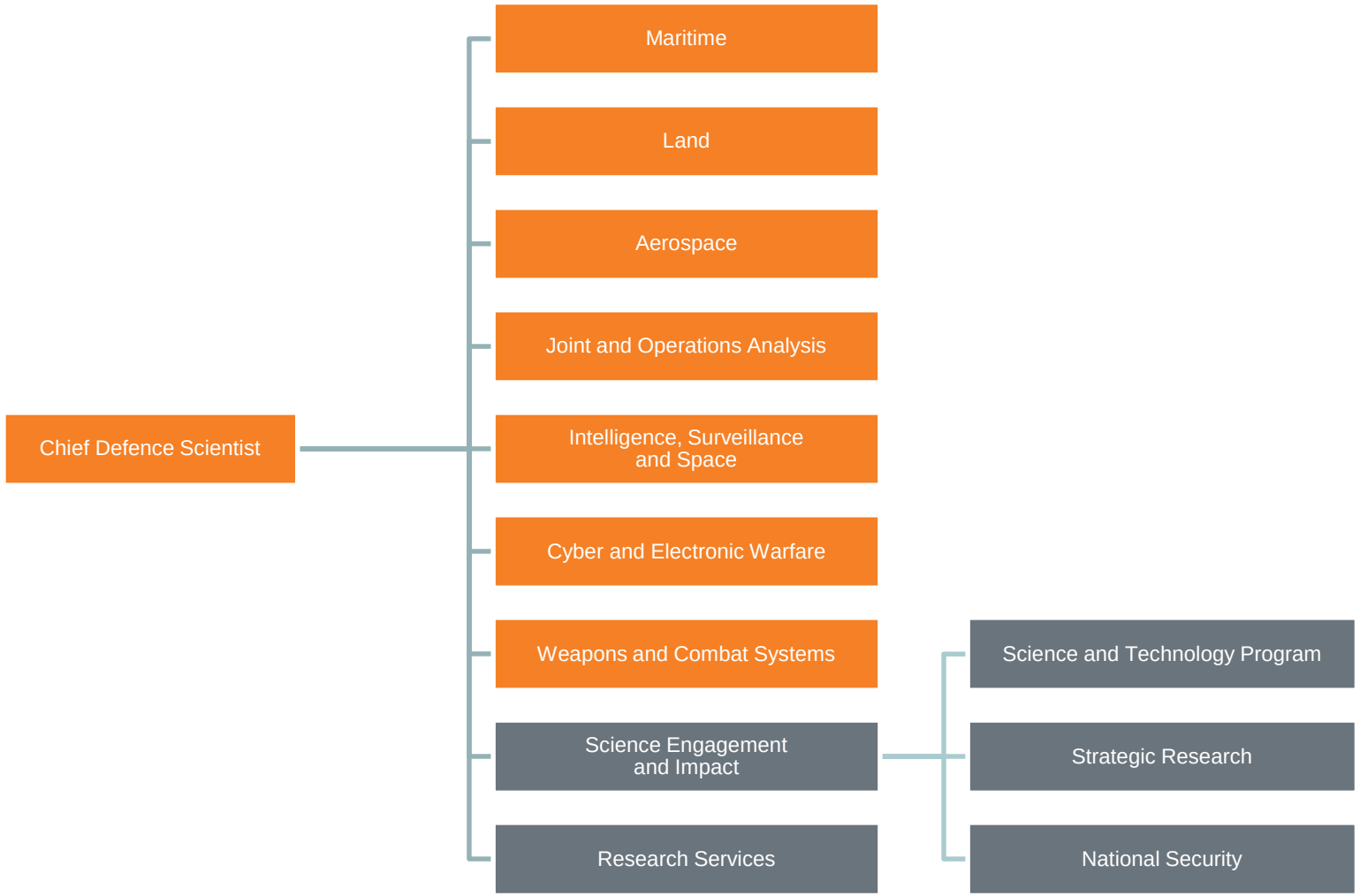


The role of Defence Science and Technology


Navy
Army
Air Force
Defence
Government
Advice, Research, Assurance, Future-proofing, Sustainment
Defence Capability and Operations
Partnerships, Emerging futures, Outreach, Translation, Coordination
Industry
Academia
SMEs
International Partners

$3.7B investment over decade – Innovation, science and technology

- Next Generation Technologies Fund
- Defence Innovation Hub
- Defence Capability Acceleration Fund
- Defence Research Infrastructure, including supercomputing

Defence Science and Technology Strategy 2030

Focus

Scale

Impact

Information warfare

Agile command and control

Resilient multi-mission space

Quantum assured position, navigation and timing

Disruptive weapon effects

Remote undersea surveillance

Operating in CBRN environments

Battle-ready platforms

Radiological Defence

Land Division

Providing support and solutions for ADF personnel by applying expertise in human sciences, vehicle and systems sciences, and chemical, biological & radiological defence.

Human systems

Vehicles and systems

Chemical and biological defence

Personnel protection (incl. radiological defence)

Delivering training, support, advice and research in radiological defence

Operate an accredited radiological laboratory for training, equipment testing and development

Provide to ADF:

- Operational support, training and technical reach-back
- Forward deployed scientist, embedded scientist roles
- Support to acquisitions, capability development
- Specialised research

Search for radiological sources in complex environments

Complex physical environments
E.g. urban areas, port facilities

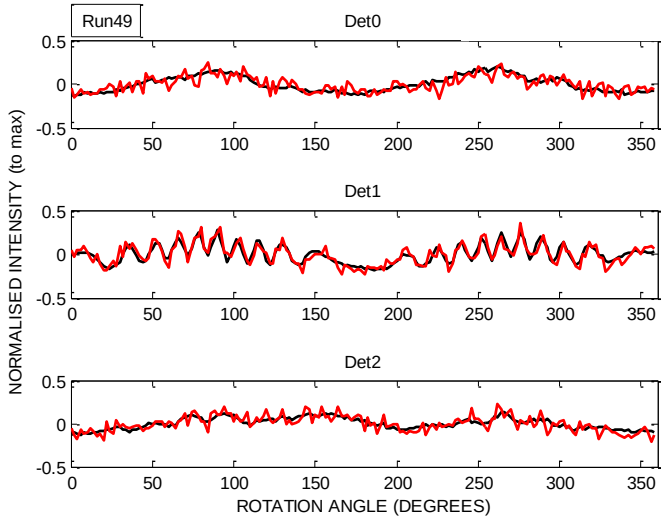
Contested environments

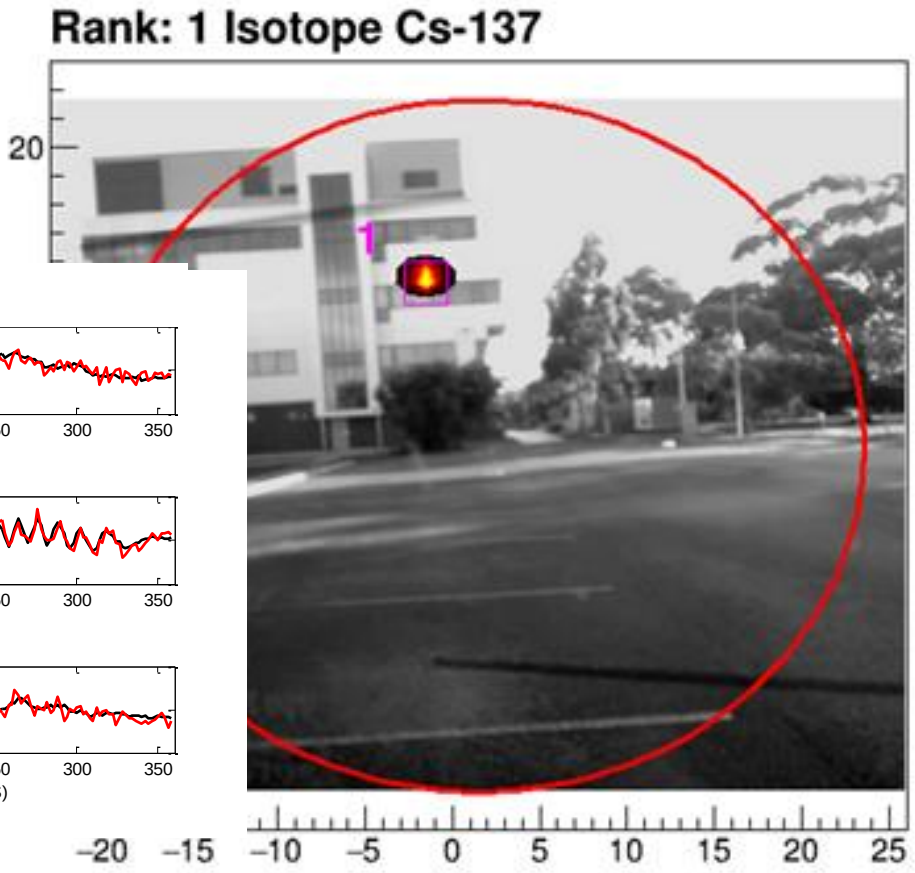
Weak source signals
E.g. shielded, low intensity

Twofold approach in R&D program

1. Development of capability demonstrators.

DSTG developed gamma imager:

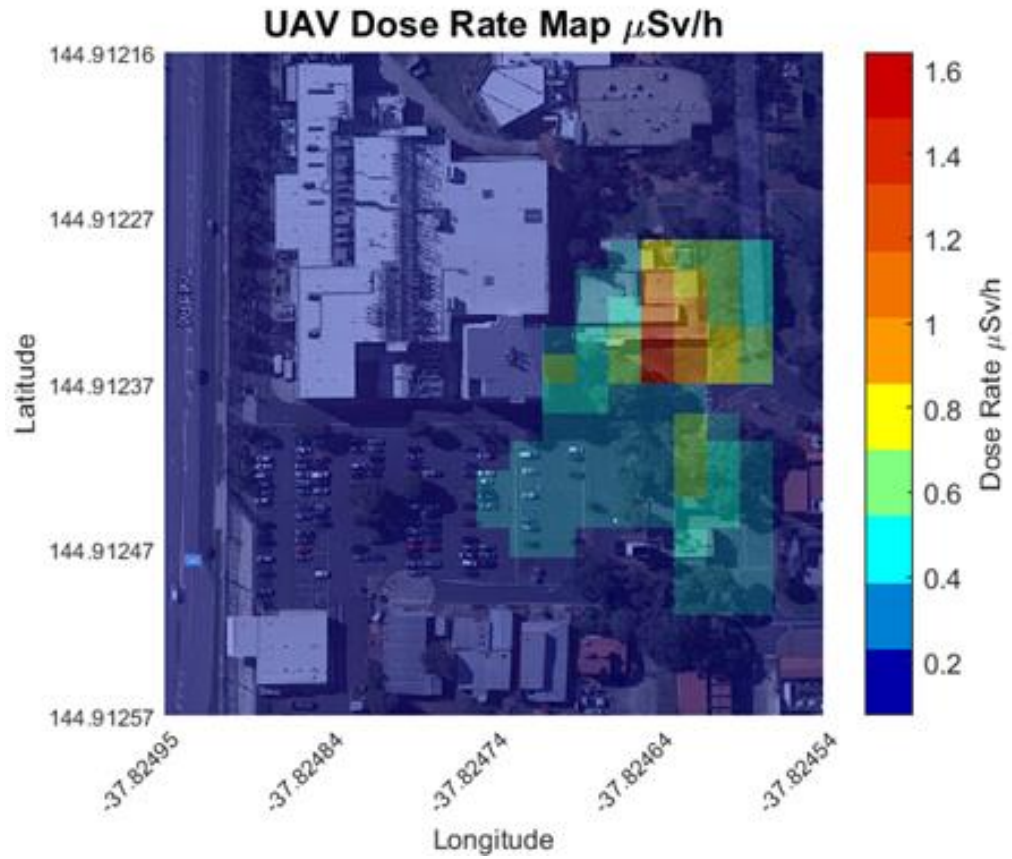




Search for radiological sources in complex environments

2. Geant4 Radiation Simulation Development

- Simulation where trials are too difficult, dangerous or expensive
  - detector development
  - support to detector evaluation and procurement
    - Validated HPGe, NaI, LaBr detector models
  - new concepts of use for equipment
    - E.g. UAV-based search
  - new radiation source search methodologies
- Including implementation of neutron transport and activation models

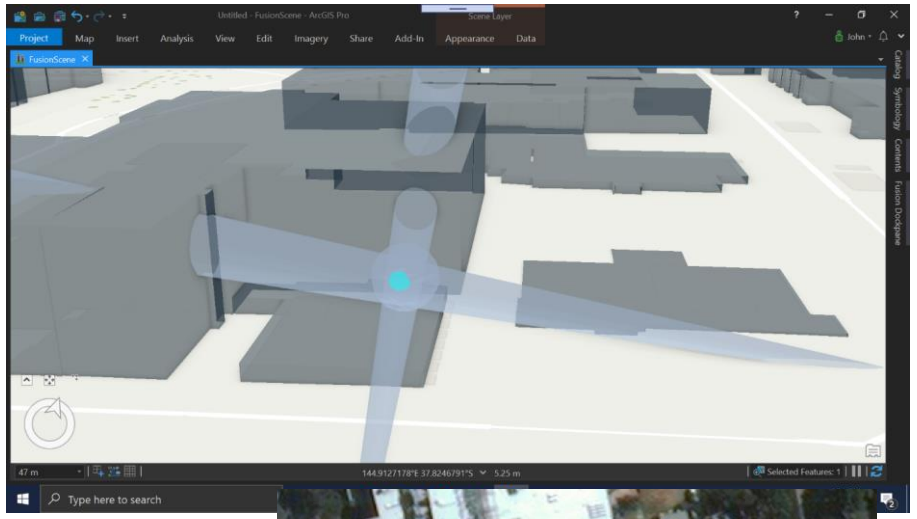


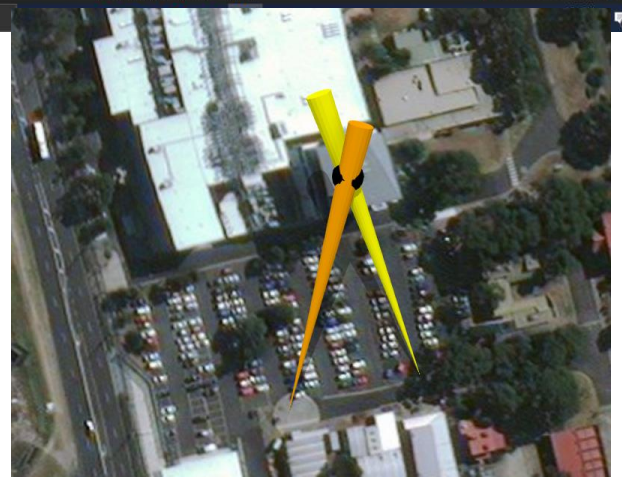
Radiation sensor data fusion and visualisation

Proliferation of new sensing and survey paradigms including UAV/UGV sensors and standoff radiation imagers

But for Defence use, produces issues around:

- User requirements and T&E standards to guide acquisition
  - current standards based largely on safety
- Integration issues
  - how will new capabilities interface with existing rad search capability
- Data complexity
  - new detection systems will provide rich data which may overwhelm operators





Fused data from DST gamma imager

Visualisation of radiological survey data

Thank you

dst.defence.gov.au