# ALGORA Systems

## Solutions to agile workflow

Human capability development and resourcing is critical for any organisation, and even more so for large organisations like Defence. Having timely and sufficient supplies of trained personnel and supervisory staff is critical to Defence operations and the sustainment of capability.

DST has established the ALGORA Systems team to create efficient and sustainable technologies for human capability development using internationally competitive operations research, simulation and modelling techniques.

In conjunction with university researchers, DST's ALGORA Systems team applies systems analysis to challenging areas in training and manpower for future Defence aircrew training, planning and scheduling.
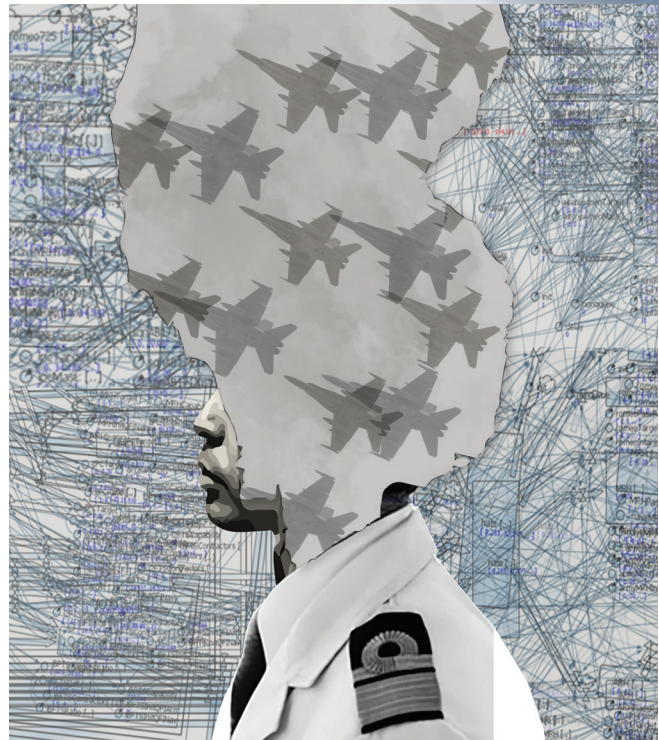
### Reconfigurable Support tools and Solutions

The ALGORA systems team has developed a multi-purpose personnel planning and scheduling software that:

▶ tracks live manpower flows.

▶ serves as a diagnostic tool to indicate bottlenecks, under/oversupply and queuing.

▶ supports forward forecasting.

▶ enables strategic what-if scenario analysis – design space exploration.

▶ provides transparent visualisation of ranks/positions for multi-users.

The team has also developed a timetabling solution that allows course providers and managers to optimise student allocations in an environment with uncertain pass rates, policy changes and resource changes.

### Research Capabilities of the ALGORA Systems team

▶ algorithm design and implementation.

▶ discrete and stochastic optimisation.

▶ decision modelling (for example Markov Decision Processes).

▶ data analytics for systems analysis.



*Above: Navigating the complexities of manpower supply*

▶ simulation (discrete event simulation, systems dynamics and agent based systems).

### Future Applications

The techniques being developed by DST are widely and directly applicable to other areas such as logistics, transportation, airfield optimisation and forecasting, resource allocation and management for disaster mitigation and recovery.

### Partnering Opportunities

DST welcomes licensing or collaboration inquiries from organisations that require transparency and forecasting of its future personnel training and planning.

### For further information contact:

PartnerWithDSTGroup@dsto.defence.gov.au

PartnerWithDSTGroup@dsto.defence.gov.au          www.dst.defence.gov.au