



TICRA Tools

Unified workflows for advanced antenna analysis and design

Developing mission-critical antenna systems is far from straightforward. Antenna performance depends on many interacting variables, and even small design changes can affect efficiency, coverage, interference, cost and reliability. Understanding system behaviour early helps you reduce risk, optimise performance, and avoid costly redesigns.

As antenna systems become increasingly complex, gaining that insight often requires multiple analysis methods and specialised simulation tools. The challenge is not only to analyse a design, but to gain the confidence needed to make informed engineering decisions throughout the development process.









TICRA Tools brings specialised antenna engineering workflows together in one consistent environment. Built around a shared user interface, it enables you to model antenna systems, perform advanced analyses and combine specialised electromagnetic methods within a unified workflow.

The framework supports applications ranging from antenna design and optimisation to installed performance, scattering analysis and uncertainty quantification. By combining specialised capabilities within one environment, you can work more efficiently while maintaining consistency across projects and analyses.

The specialised methods within TICRA Tools have been developed and refined through more than 50 years of research, software development and collaboration with leading organisations in space, defence, telecommunications and science.

Shared interface. Specialised methods. Connected workflows.

Products within the TICRA Tools framework:

 TICRA Tools	 GRASP
 ARRAY	 ESTEAM
 QUPES	 UQ
 POS	 CHAMP 3D

Design.

Explore antenna concepts, analyse complex electromagnetic behaviour and evaluate design alternatives within specialised engineering workflows.

Decide.

Understand performance trade-offs and make informed engineering decisions based on accurate simulation and analysis.

Deliver.

Develop antenna systems with greater confidence through validated methods and reliable performance prediction.

Why TICRA Tools?

- Unified workflows across specialised antenna applications
- Shared user interface and modelling environment
- High-accuracy specialised electromagnetic methods
- Select the best method for each part of your antenna system
- Based on more than 50 years of research, software development and industry collaboration
- Direct access to support by experienced antenna engineers



Reflector antenna analysis and design

GRASP

Industry-standard software for high-accuracy reflector antenna analysis, developed and refined over more than 50 years. Supports efficient modelling of reflector antennas, radar systems, compact antenna test ranges, mesh reflectors, lenses and quasi-optical systems using specialised high-frequency methods.



Phased-array modelling and beamforming

ARRAY

Dedicated software for phased-array antenna design, analysis and optimisation. Combines element design, array analysis and beamforming optimisation within a single workflow, supporting efficient exploration of design trade-offs and large-scale array configurations.



Installed performance and radar cross section

ESTEAM

Full-wave analysis of scattering, radiation and installed antenna performance for electrically-large platforms and complex antenna systems. Supports conducting and dielectric materials, advanced antenna models and efficient RCS analysis.



Reflectarray, transmitarray and FSS design

QUPES

Analysis, design and optimisation of quasi-periodic surfaces including reflectarrays, transmitarrays and frequency selective surfaces (FSS). Supports all stages of the design from unit cell to optimisation of complete finite-sized structures.



Uncertainty quantification and sensitivity analysis

UQ

Evaluate the impact of manufacturing tolerances, material properties and other design uncertainties on antenna performance. Estimate expected performance and confidence intervals to support more robust engineering decisions.



Contoured beams and multibeam array fed reflectors

POS

Optimise reflector antennas, arrays and array-fed reflector systems to achieve desired coverage and performance objectives. Supports reflector shaping, array optimisation and beam synthesis workflows for complex antenna systems.



Feeds and waveguide components

CHAMP 3D

Design and analyse feeds, waveguides and complex feed chains, with support for both general 3D and rotationally symmetric structures. Optimise microwave components and evaluate scattering parameters, coupling and radiation performance within a fully parameterised design environment.

Developed for mission-critical engineering

TICRA Tools is used by engineers working on satellite communications, radar systems, Earth observation, scientific instruments and advanced defence applications where performance, reliability and validation are critical.

The framework combines specialised electromagnetic methods with practical engineering workflows to support accurate analysis and confident decision-making throughout the antenna development process.

Specialised software developed through decades of engineering collaboration

Since 1971, TICRA has worked closely with customers, research institutions, and industry partners to develop electromagnetic software for complex antenna applications where accuracy and reliability are essential.

This heritage continues to shape TICRA Tools today — combining scientific expertise, specialised methods and practical engineering workflows within one consistent framework.



Design. Decide. Deliver.

More than 50 years of expertise in high-accuracy antenna modelling software for space, defence, telecommunications and science.

Explore how TICRA Tools can help you make confident engineering decisions.

[All software | TICRA](#)



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