SCi-Toolset

Integrate. Accelerate. Empower.

Product catalogue

Raytheon
An RTX Business

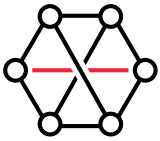
Simplifying complex information

Welcome to the product catalogue

Raytheon, a business of RTX, is a leader in technologically advanced, intelligent solutions that help redefine the aerospace and defence industry. We dedicate our capabilities, comprehensive portfolio and expertise to solving our customers' toughest challenges and meeting the demands of the global market. Our systems are developed against secure-by-design principles, incorporating security measures from the very beginning of the design process to ensure robust protection against potential threats and vulnerabilities. We adopt and build on the foundation of user-centered design principles during our design process, ensuring that our technology is tailored to the end user. We communicate our commitment through an engaging, clear and expert approach, empowering our customers with strong, customer-centric solutions.

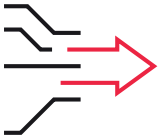
The SCi-Toolset is a sophisticated software suite that offers information management, image processing and intelligence exploitation capabilities crucial for extracting timely and usable intelligence that provides command and control (C2) with situational awareness. With decades of experience in supporting peacekeeping and defence missions, Raytheon continues to provide innovative solutions with the SCi-Toolset, empowering our customers to store, manage and exploit vast amounts of data from multiple data sources to aid critical decision-making.

The SCi-Toolset supports the intelligence cycle and the Joint intelligence, surveillance and reconnaissance (ISR) process as outlined in NATO doctrine AJP-2. At its core, the SCi-Toolset supports a coalition-shared, data-centric concept, aligned with STANAG 4559 to ensure interoperability and efficiency in managing and exploiting ISR data. The toolset provides a seamless, integrated solution for gathering, processing, analysing and sharing intelligence, enabling our customers to achieve superior situational awareness and operational effectiveness.



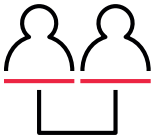
Integrate

With diverse data sources to help you create a comprehensive and cohesive intelligence picture.



Accelerate

With data processing capabilities to ensure that you can generate actionable intelligence swiftly and efficiently.



Empower

With the tools, insights and capabilities you need to make informed decisions, take decisive actions and drive outcomes effectively.

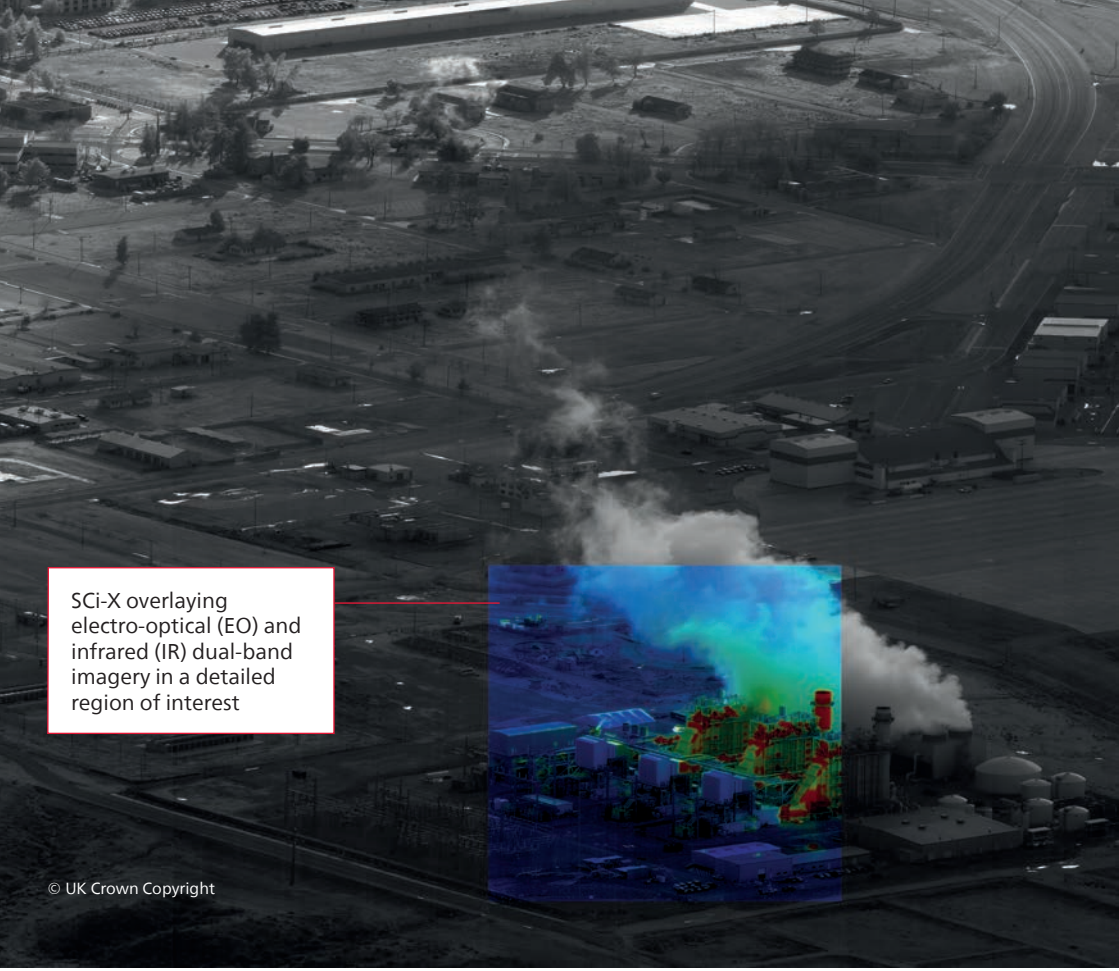
SCi-X

SCi-X is a desktop application that provides the fastest way of viewing and exploiting imagery. It delivers advanced analysis so you can gain a deeper understanding of your intelligence.

Our insight into imagery processing has illustrated the time-critical need to process large volumes of data. Developed to support tactical reconnaissance, SCi-X is capable of loading and rendering hundreds of high-resolution image frames in seconds. It offers advanced analysis tools to extract meaningful intelligence and output it to reports.

Key features

- Large-volume, real-time screening and exploitation of single-or multi-band imagery;
- Exploitation of multiple imagery types, including NITF 2.1, NSIF 1.0 (STANAG 4545), JPEG 2000, TIFF, GeoTIFF, PNG and SCi-X-generated IMG;
- Exploitation of STANAG 4609 full-motion video, including mensuration and extraction of annotated static images, and video clipping for generation of intelligence products;
- Exports snapshots to NITF, GeoTIFF, TIFF, PDF, PNG, JPEG, and IMG image file formats;
- Report generation into Microsoft Office (Word and PowerPoint) templates;
- Map generation into map product templates;
- Full set of mensuration, geo-location, annotations and symbol tools, including multiple datums and coordinate types (Lat/Long, UTM and MGRS);
- Ingest, view and search of ESRi-generated annotations and visualise symbols (Shapefiles);
- Scroll, mosaic, flip book, editable and panorama layouts;
- Vertical and horizontal side-by-side display;
- Anaglyph and active stereo;
- Platform and sensor auxiliary data display (e.g. mission, target, location, altitude, target standoff and slant range);
- Tracking map view of mapping or satellite imagery, with the ability to terrain-drape imagery, including selectable overlays, sensor location, footprint and field of view.



SCi-X overlaying electro-optical (EO) and infrared (IR) dual-band imagery in a detailed region of interest

SCi-Toolset integration features

SCi-X has a secure login interface with the SCi-Toolset server, offering extended functionality with other products and the following advanced image services:

- Panorama service: provides rapid panorama generation of an image scene from sweeping sensors;
- Image fix-up service: removes artefacts and enhances imagery without distortion or content removal;
- Image tile service: streams large volumes of imagery from the SCi-Toolset server's database for rapid rendering.

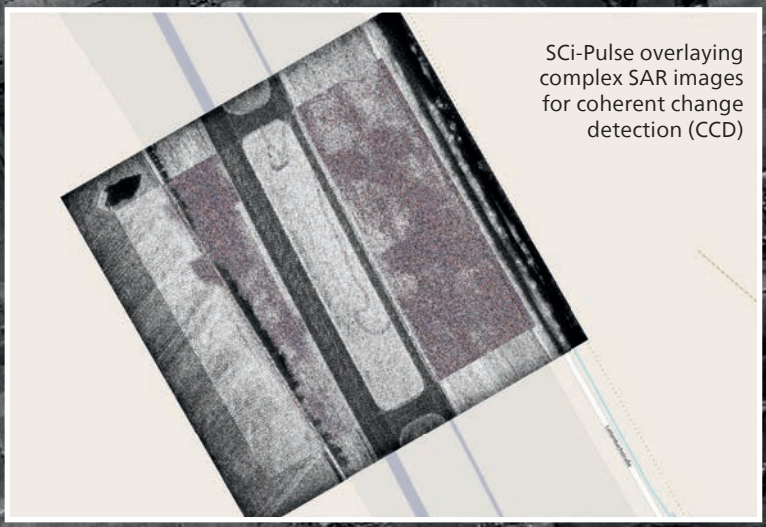
SCi-Pulse

The SCi-Pulse application enables fast and effective analysis of synthetic aperture radar (SAR) and ground moving target indicators in a geospatial context, providing a deeper understanding of your intelligence.

Tactical real-time intelligence creation calls for tools that support the timely analysis of sensor data. SCi-Pulse supports the exploitation of all-weather ISR. Designed to minimise workload and training burden, SCi-Pulse delivers a cost-effective solution to meet the needs of analysts working in high-tempo environments.

Key features

- Supports multiple data types, including NITF 2.1, GMTI (STANAG 4607), ESRi Shapefiles, KML and KMZ;
- Visualises SAR imagery for amplitude, complex layers and ortho-mosiac display;
- Coherent and amplitude change detection tools;
- Visualises GMTI plots and heat maps, with filtering for time, geo-position and radial velocity;
- Geospatial annotation, image snapshots and export of KML/KMZ layers;
- Displays live streaming feeds for GMTI, AIS and tracks;
- Supports fast and effective analysis in high-tempo environments.



SCi-Pulse overlaying complex SAR images for coherent change detection (CCD)

SCi-Pulse stitching PicoSAR images into a panorama draped over mapping

SCi-Pulse filtering geospatial moving target indicators (GMTI) as a heat map

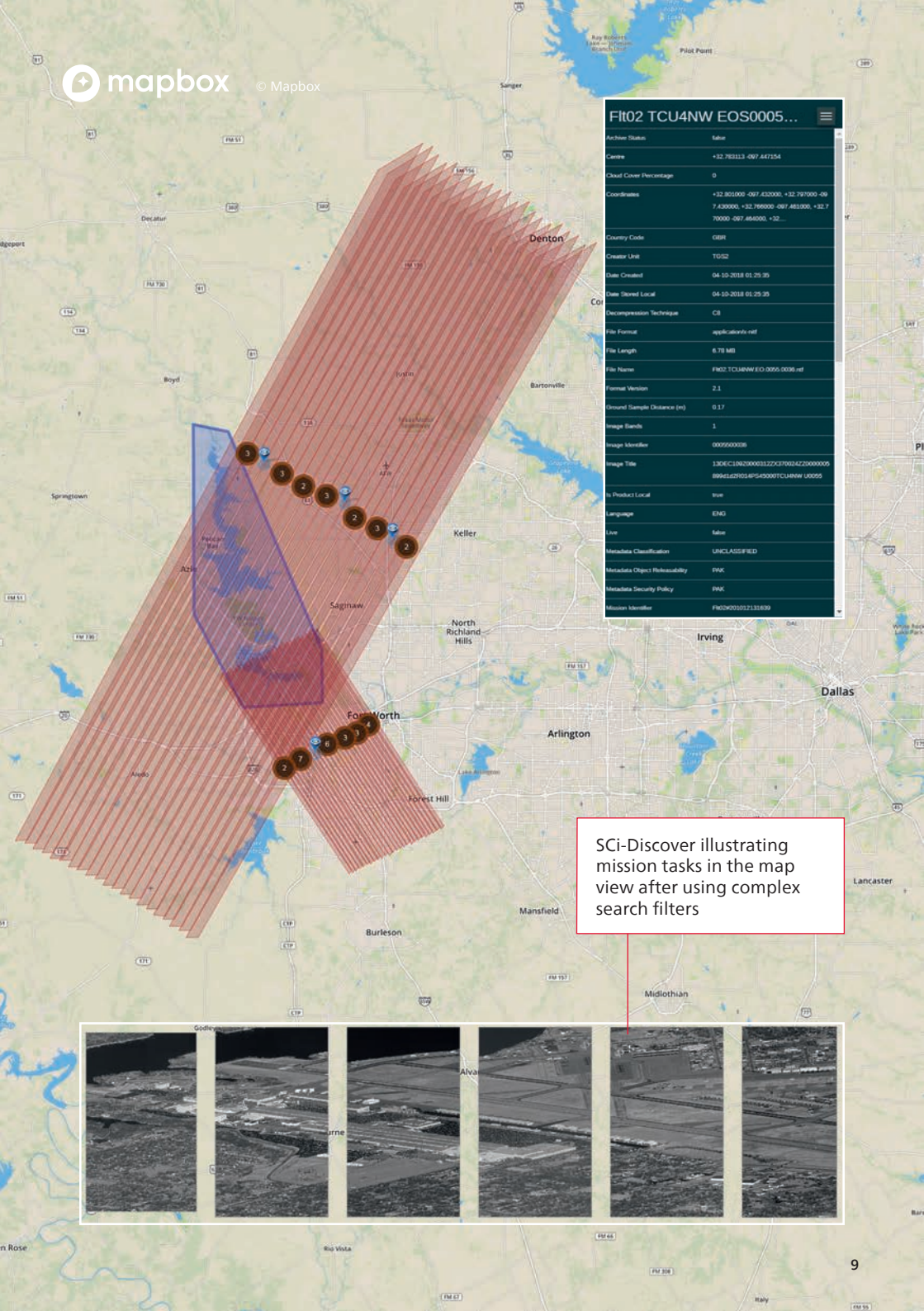
SCi-Discover

SCi-Discover is a database that facilitates the discovery, visualisation and sharing of intelligence stored in the SCi-Toolset from a range of digital sources. This reduces decision-making through advanced situational awareness.

Digital data is being created at an ever-increasing pace. SCi-Discover provides an enterprise solution for visualising and sharing stored intelligence data. It provides near-real-time, meta-data synchronisation and product localisation over high- and low-bandwidth networks, overcoming the key weaknesses of legacy federated searching.

Key features

- HTML5 web client with map, table, document content and mission views;
- Content filters for acquisition time, product type, geographic area, universal attributes, user-defined tags and source catalogue;
- Graphical search for geospatial content using line, polygon, point and radius tools;
- Interactive content preview of products, including full-resolution screening through the web;
- STANAG 4559 AEDP-17 Edition 4 compliant and fully interoperable with extant NATO coalition-shared data systems;
- Database synchronisation and automatic scheduled services allow reach back, data localisation and data archiving.



SCi-Discover illustrating mission tasks in the map view after using complex search filters

SCi-Contour

The SCi-Contour application facilitates the exploitation of geographically aligned imagery, including the creation of time-sequenced layers to support pattern-of-life and change detection.

Sensors are often capable of generating high-volume swathes of imagery. Inaccuracies in the geo-information provided by the airborne platform reduces the ability of the user to carry out change detection and create seamless large-area mapping.

SCi-Contour provides the building blocks to produce geographically accurate map layer products from a series of images using the embedded automatic image registration (AIR) technology. This offers an optimised dimension to existing sensor capabilities, enhancing the tools available to imagery and intelligence analysts.

Key features

- Visualisation of single-band or multispectral imagery from sweeping and grid sensor imagery scenes in a seamless single image;
- User-triggered image correction;
- Correction of hard-to-register imagery;
- Image layer generation from multiple image scenes;
- Time line to visualise multiple capture scenes with the ability to screen through time to highlight changes;
- Displays KML and KMZ layers over the top of the imagery;
- Export of map layer tile sets in web map tile service (WMTS) format used in other geospatial applications;
- Standalone desktop viewer to support the visualisation of exported image MBTiles.


Geo-accurate imagery stitched together and processed by SCi-Contour into a map layer product
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mapbox
© Mapbox

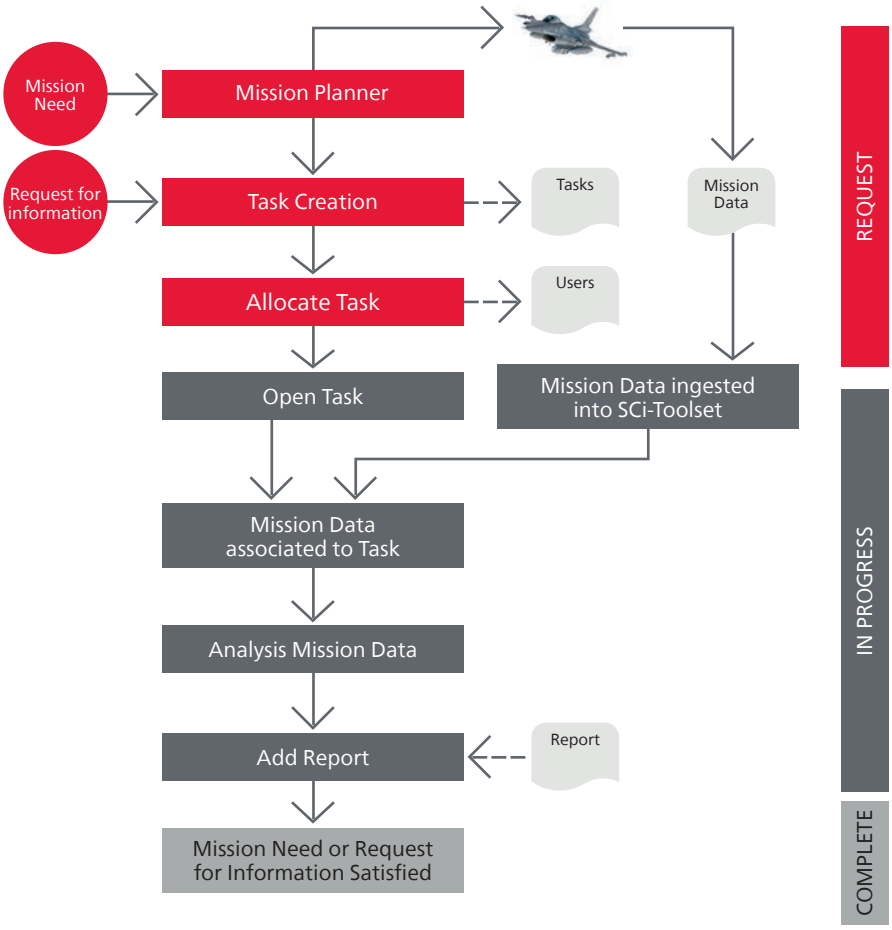
SCi-Progress

The SCi-Progress application simplifies and expedites geospatial analysis by seamlessly integrating tasking with the data stored in the SCi-Toolset.

Traditional tasking tools often focus on what needs to be done, who is tasked to do it and how far the work has progressed. SCi-Progress takes this further by providing analysts with a task-relevant portal into the SCi-Toolset. This supplies them with a filtered view of stored information relevant to their task and a seamless mechanism to add new information and reports.

Key features

- Historical collateral from the task's area of interest is automatically provided to the analyst;
- Product data is automatically associated to the relevant task as soon as it becomes available;
- Users can visualise product data before adding it to a managed "shoe box" of selected products required for the analysis;
- Tasks are automatically created from mission plans;
- Tasks are assigned and reassigned to existing users or user groups;
- Overview of task allocation and the workflow status can be monitored and managed from start to completion;
- Additional products, such as images and reports added to the task, are instantly discoverable and disseminated via SCi-Discover.



SCi-Progress task management workflow

SCi-Maps

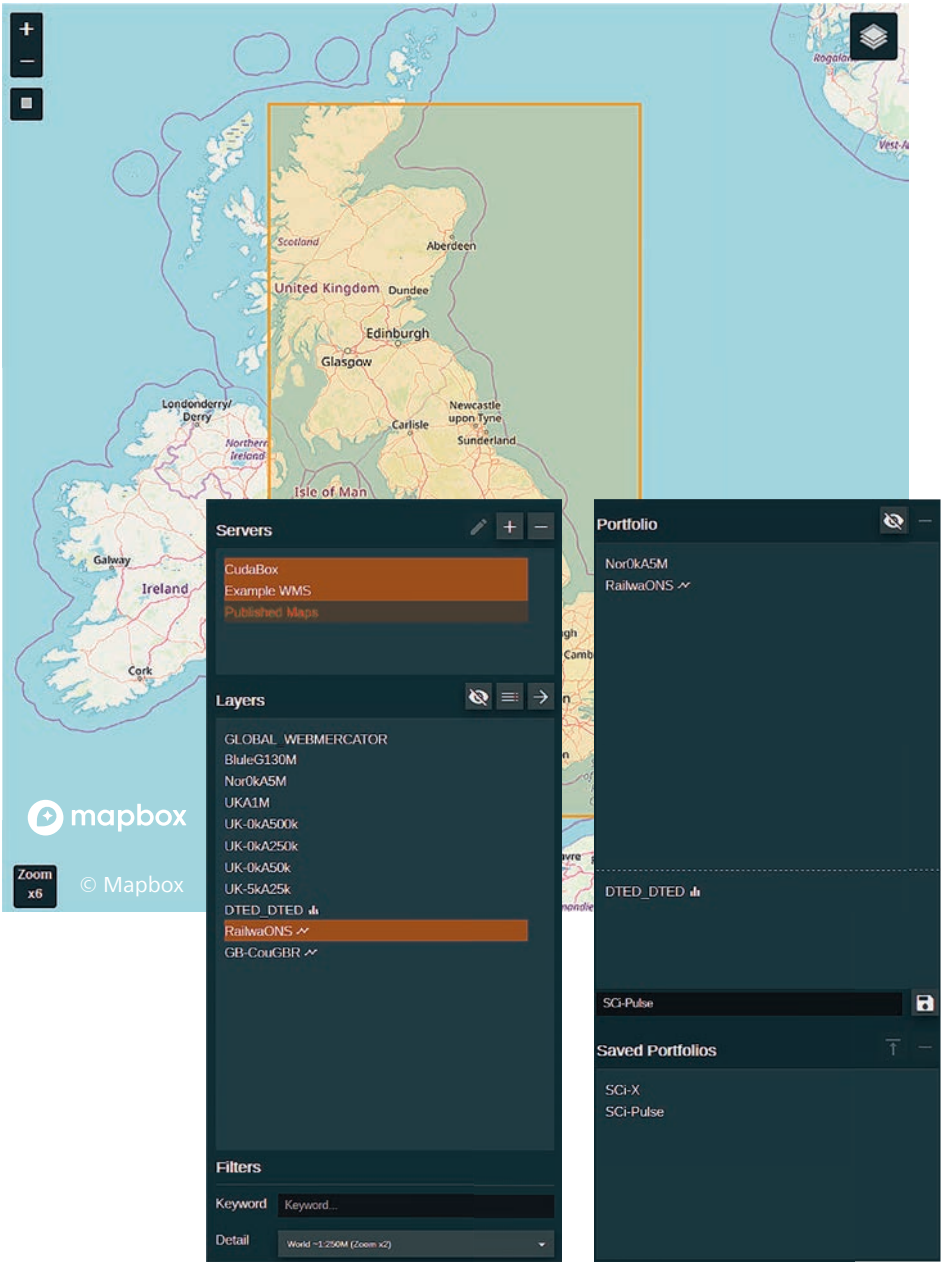
SCi-Maps is an application that manages map layers from multiple sources and serves a specific suite of map data to support individual applications within the ISR processing exploitation and sharing enterprise.

Map services are essential for today's geospatial tool sets. Applications often vary in their map layer requirements or are dependent on other applications for layer manipulation. This often results in slow rendering and conflicting map layers.

SCi-Maps provides system administrators with the ability to ingest map layers, unify map service sources and flexibly serve dedicated map portfolios for targeted applications or users. The control offered by SCi-Maps provides a map service conducive for analysts and operators.

Key features

- Supports the ingest of universal map data formats: ASRP, CADRG, DTED, GeoTIF, NITF, TOC, VRT and vector GIS formats;
- Interfaces with external map services;
- Allows the creation and management of specific map portfolios;
- Provides a dedicated WMTS suite of map layers targeted at individual applications.



SCi-Maps layer acquisition from multiple map servers

SCi-Maps tailored portfolios for SCi-X and SCi-Pulse users

SCi-Gather

SCi-Gather is an application that automatically acquires data link transmissions from airborne platforms to facilitate real-time tactical exploitation and sharing.

Command and control of data link antennas is key to data acquisition for tactical reconnaissance systems. SCi-Gather provides data link automation specifically designed for tethered data link execution.

SCi-Gather is available for CA-270, DB-110 and MS-110 imaging sensors. SCi-Gather supersedes the legacy first-and second-generation data link automation (DLA and DLA2) products.

Key features

- Primary control interface for the MS-110 and CA-270 translators;
- Monitors the live position of airborne sensors and activity of surface terminal equipment without the need for mission plans;
- Coordinates the translation of data on demand from airborne pods, with the ability to select individual image frames or scenes;
- Coordinates the translation of data from removable memory modules or RAW files;
- Automatic control of surface terminal equipment without the need for the system or operator to steer or adjust the direction of the antennas;
- Initiates connection changes of surface terminal equipment from one airborne sensor to another;
- Text messaging service between the user and the pilot to coordinate activity without the need for radio equipment.

Supporting L3 surface terminal equipment supplied with our DB-110 and MS-110 systems for tactical data link tasks

Panorama service

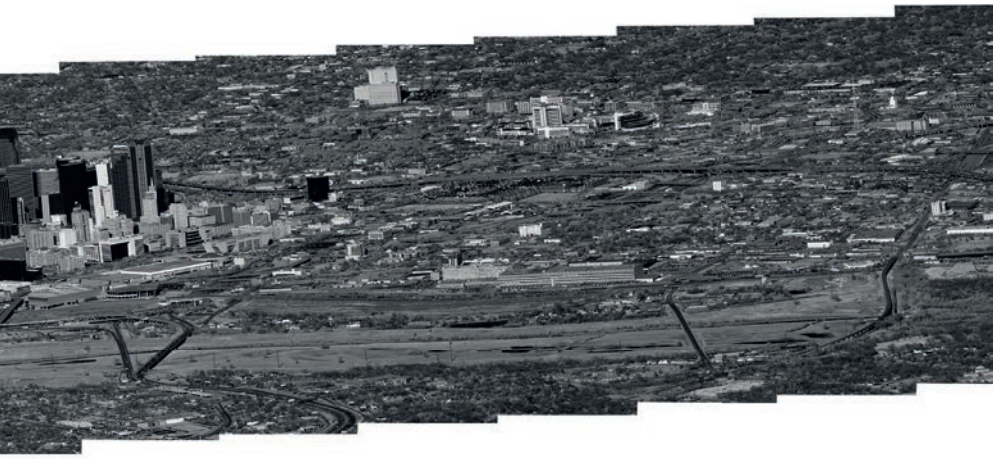
The panorama service offers advanced high-performance panorama generation to support SCi-X, optimised for DB-110 and MS-110 mission data.

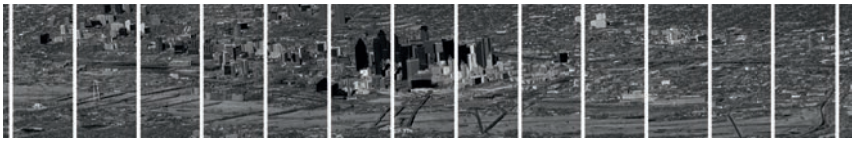
Modern airborne systems are capable of capturing coverage of large geographic areas in a single imaging pass. Screening individual image frames can often degrade the efficiency of analysis. To best visualise large areas, SCi-X can display a seamless single image for the entire scene.

Panorama images can be generated from an imagery scene containing a small number or several hundred frames. A scalable clustered processing solution provides the capability of processing very long imaging runs in a very short amount of time. The imagery is corrected and the exposure and contrast levels are balanced across the entire image scene, whilst retaining the fidelity of the original input imagery.

The performance of the panorama service's processing engine can be optimised to meet customer throughput performance needs. SCi-X can display a single image within a few seconds, depending on the hardware resources available for the panorama service.

Snapshot of a panorama from 132 frames of dual-band (EO/IR) imagery. The image above shows 9NM^2 (30km^2)





Section of 132 frames of dual-band (EO/IR) mission task prior to panorama generation

Automatic image registration service

The automatic image registration (AIR) service improves the geographic accuracy of imagery, without pixel distortion or modification.

Measurements from imagery can often suffer from the inaccuracy of the sensor and aircraft position. The AIR service is an entirely automated processing engine for matching sensor imagery (both nadir and oblique) to precision accurate reference imagery, using specifically designed computer vision techniques and advanced mathematical modelling.

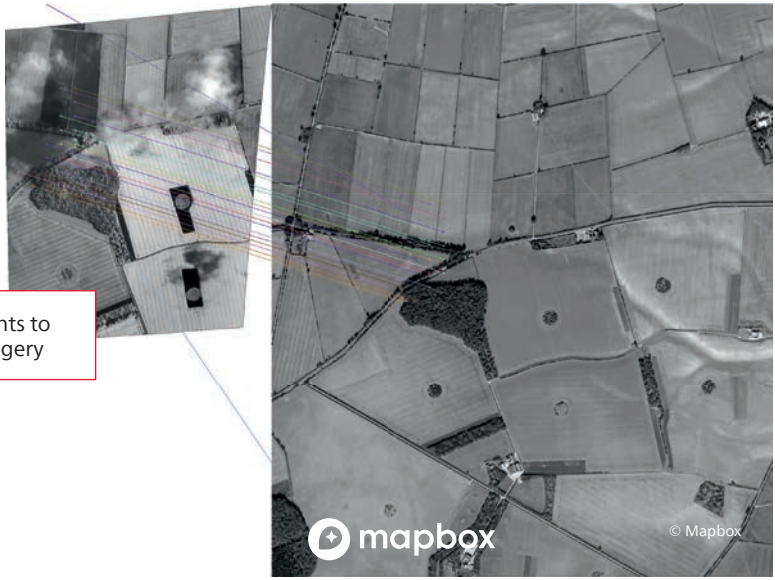


Image tie points to reference imagery

Key features

- Improved geographic accuracy of imagery;
- Facilitates temporal change detection;
- Geographic improvements are encoded back into original NITF imagery;
- Provides accurately registered imagery for map layer production.

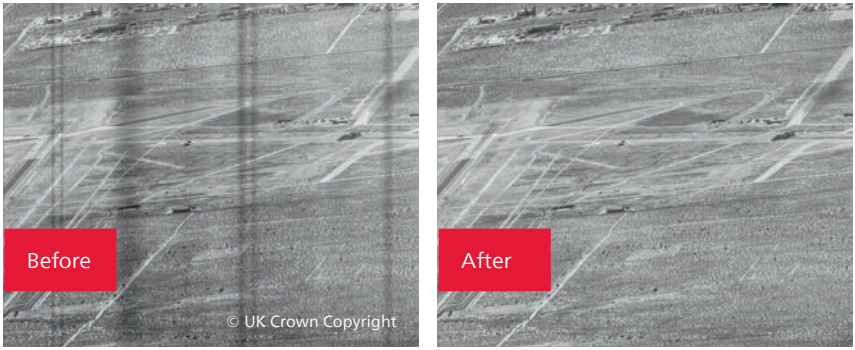
Image fix-up service

The image fix-up service enhances the quality of the imagery by removing systemic artefacts, optimised for the DB-110 mission data.

Airborne sensor windows often accumulate dirt or deposits that reduce the image quality captured. Imagery can also suffer from near-to-far brightness gradients when long distance scans are performed. Imagery processed through the image fix-up service enables these undesirable consequences to be removed, creating a high-quality end product with minimal effort and impact on scene content.

Key features

- Single-click feature in SCi-X to enhance both EO and IR images;
- Server-side processing for the benefit of multiple users;
- Corrected images seamlessly stitched by the panorama service;
- Removes vertical striping and gradient artefacts;
- Removes frame-to-frame (and framelet) repeated artefacts, such as smudges and smearing;
- Provides scene brightness averaging.



Vertical striping is removed and the image is enhanced.

Data translators and standards converters

High-performance bulk acquisition, translation and standards conversion of imagery supports cataloguing for immediate analysis and sharing.

Mission data is often produced from high-bandwidth air-to-ground data links, removable memory modules, network streams or computer files. Raytheon has extensive experience building data translators to convert still and motion imagery into common standard formats. Translators and standards converters can be automated to process data on demand or manually through web-based user interfaces.

Translators

- High-speed, real-time translation of native or primary imagery (STANAG 7023) to produce NITF 2.1 imagery with airborne support data extensions, including validation, decompression, image formulation and JPEG2000 compression;
- Compliant with common data links (STANAG 7085), NATO advanced data storage modules (STANAG 4575), Ampex Tuffserve and Zodiac removable memory modules;
- CANINE is Raytheon's data translator for the CA-270 imaging sensor;
- RABIT-N is Raytheon's data translator for the DB-110 imaging sensor.

Video input standards converter

- Video stream standards converter for dumb analogue and digital motion imagery;
- Screen-scraping technology captures on-screen metadata to produce a STANAG 4609-compliant H.264 transport stream video;
- Supports Hermes 450, Watchkeeper and MQ9 Reaper UAVs, along with the MX-15 and MX-16 motion imagery sensors.

The DACAR airborne server incorporates the RABIT-N and SCi-Discover server technologies to provide in-flight data translation and data storage.

Transportable system incorporating acquisition interfaces

Systems

Raytheon provides intelligence systems in different form factors to suit a variety of operating environments. Our systems can be specialised to reflect their roles within an organisation to meet customer data discovery and collaboration needs.

Whether standalone or part of a federated network, we design our systems to be robust, secure and supportable. Utilising commercial off-the-shelf hardware, we aim to keep our systems supportable, maintainable and flexible.

Our systems are network-enabled, providing users with the capability to collaborate with other systems over local or wide area networks. These systems are especially designed to work over limited-bandwidth networks, which makes them unique in today's marketplace.

System roles

- Near-real-time data acquisition;
- Data ingest storage for discovery and network sharing;
- Data analysis, exploitation and reporting;
- Data archiving.

Portable systems

Portable systems are the smallest form factor systems available. Their very small footprint is designed to be carried or worn by an individual. They can be integrated with third-party sensor systems. Data can be ingested and categorised in such a way that it can be shared over any existing network.

Mobile systems

Mobile systems are designed and built into cabins that can be operated without the dependency of fixed infrastructure, on or off an all-terrain vehicle. With full environmental controls (temperature and humidity), the system comes with its own generator and communications link to an airborne platform if required.

A mobile system deployed on an all-terrain vehicle, equipped with a trailer for a generator and data acquisition kit

Transportable systems

Transportable systems are designed to be forward deployable to semi-static office-based facilities. The hardware is integrated into transportable cases, providing the flexibility necessary for rapid deployment.

Fixed systems

Fixed systems are intended for static office-type facilities. The design allows for servers to be easily located away from the main office environment, reducing noise and heat generation from the areas where the workstation and users will be operating. Fixed systems can be delivered as a complete system with associated server racks or integrated into existing customer infrastructure.

Archive systems

Archive systems can consist of multiple long-term storage systems, mirrored for data security protection. They are simple to manage, provide automated backups and are scalable. In combination with SCi-Toolset, the archive systems offer flexibility to support evolving user needs, providing reliable storage that is resilient to failure and protects against isolated disasters.

Virtual systems

Using cloud-based servers, the virtual systems provide global access and scalable performance. This is supplied as a managed service, which can reduce capital expenditure.

An archive storage node installed into industry-standard 19 inch racking

Systems engineering

Our systems engineering teams are highly skilled and have a rich heritage in delivering effective solutions. We understand that optimal systems engineering is founded on trust, satisfying customers' needs to the highest standard, mindfulness of cost efficiencies and compliance throughout a system's entire life cycle.

Through established engineering practices and a wealth of experience, we have designed, developed and implemented highly sophisticated systems in a wide variety of environments.

Through stringent specification, assessment and verification processes, our products adhere to all required certifications. Partnering with leading hardware manufacturers ensures that the highest standards are maintained.

Network and Infrastructure knowledge and experience are core competences within our team of leading industry professionals. Delivering integrated and secure networks provides customers with a high degree of confidence in their network capability.

Our systems engineering experience has extended projected life cycles of systems beyond expectation, delivering long-term capabilities and value to our customers.

Logistics and support

Raytheon offers a comprehensive product support package that provides facilities and services required to support customers in maintaining their products throughout their operational life.

Our support approach is proactive rather than reactive, emphasising communication, planning and preventative maintenance. Incorporating standardisation and economies of scale, Raytheon aims to deliver consistently high-quality services while reducing life-cycle costs for individual customers. A tailored support package is developed for each customer for the suite of products and systems owned by the customer and the customer's specific support strategy needs.

Through-life support of our systems is initiated at the design phase with full analysis and assessments via our integrated logistics support, tailored for the customer's needs. This ensures our systems deliver optimal availability, reliability and maintainability.

Key features

- Dedicated technical team available to support the customer and end users in software and system operation, including onsite support visits;
- Contracted engineering technical service that embeds a fully trained full-time Raytheon engineer at the customer's site;
- System hardware technical support and repair with original equipment manufacturer (OEM);
- Scheduled software updates and periodic refresh of system hardware.
- Operator and maintainer technical manual updates;
- Operator and maintainer training on software and systems;
- Security patching and vulnerability remediation;
- Obsolescence monitoring;
- Annual price list updates for spares and return evaluations;
- Return material authorisation (RMA) for repair and return.

Sales information

The SCi-Toolset enterprise server comes in three licence packages.

Essentials:

Standalone SCi-Discover, lite version of SCi-Maps, authentication service and image service with the image tile server

Standard:

Essentials package plus ability to integrate into the ISR enterprise

Advanced:

The complete package, including advanced image registration tools such as SCi-Contour

SCi-Toolset desktop application packages

Desktop application licences available for SCi-X and SCi-Pulse (standard and advanced)

All licence packages are supplied as perpetual licences with annual upgrade entitlement or through annual subscription, and can be deployed as a single instance either on physical servers, virtual servers or within an S3 cloud.

Pre release

Tasking requirements and streaming service

This service provides the backend replication and exchange services for the NATO ISR workflow and ISR streaming. It supports users to deliver timely and accurate information by effectively managing ISR tasking and Intelligence requirements and publicizing streaming data. This aligns with the synchronisation of the Intelligence cycle and the JISR process.

Functionality:

- Task management: Organizes and prioritizes tasks to ensure that the right information is processed and delivered efficiently;
- Requirements handling: Captures and maintains intelligence requirements, ensuring that the information provided aligns with specific needs and objectives;
- Streaming replication: Manages the continuous flow of data streams, ensuring that information is current, reliable, and accessible across the platform;
- Integration with Suite: Works seamlessly with other components such as SCi-Progress, enabling a cohesive and integrated approach to data management and tasking.

Key features

- Provides a common picture depicting sensors and platforms in context;
- Presents live and archived video via a web browser user interface;
- Compatible with AEDP-18 and -19 standards for coalition data sharing.

Machine learning and artificial intelligence

SCi-Edge

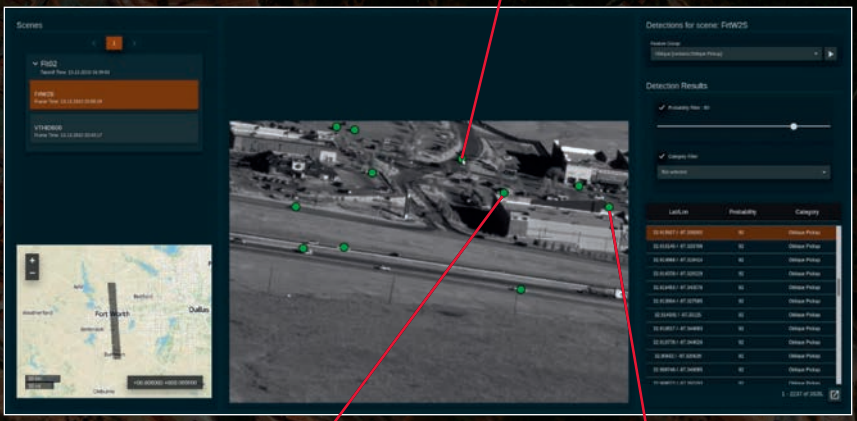
SCi-Edge is a pioneering capability enhancement to the SCi-Toolset, integrating machine learning and artificial intelligence to optimise operational efficiency. This cutting-edge solution alleviates the cognitive load on analysts by expediting the object detection process within SCi-X and SCi-Pulse, improving accuracy and ensuring commanders receive timely, high-quality reports for informed decision-making.

With SCi-Edge, users can train models to recognise any desired object from previously captured imagery without the need for third-party assistance. These trained models can then be deployed on new data to automatically identify target entities. If an item is incorrectly identified, SCi-Edge adapts by learning from the error, enhancing its detection accuracy in future operations

Key features

- Train detection models yourself without having to release your data to third parties to create your models;
- No previous AI/ML knowledge required;
- Platform-, sensor- and modality-agnostic;
- Advanced entity management.
- Automated image screening.

SCi-Edge


Scenes
Detections for scene: FrW2S
Detection Results
Lat/Lon
Probability
Category
Fort Worth
Dallas

RTX data

Global presence

186,000
employees

60,000+
patents

Key financials

$80.7 billion
net sales

$7.7 billion
research and development investment*

*2024, includes customer and company funded R&D.

RTX consists of three highly specialized businesses:

Collins Aerospace
Specializes in advanced structures, avionics, connected aviation solutions, interiors, mission systems, and power and control systems that serve customers across the commercial, regional, business aviation and defense sectors.

Pratt & Whitney
Designs, manufactures and services the world's most advanced aircraft engines and auxiliary power systems for commercial, military and business aircraft.

Raytheon
Creates next-generation defense solutions that are smarter, faster and better than previously thought possible. Specializes in integrated air and missile defense, advanced sensors, space-based systems, hypersonics and effectors.

The business at a glance

SCi-Toolset core competencies

- Solving customers' problems;
- Ingesting large volumes of data types;
- Tools to aid visualisation and situational awareness;
- Geo-accurate imagery;
- Tailored solutions to meet customer needs;
- Dedicated through-life support;
- Biased for action.

SCi-Toolset value proposition

- Tactical real-time intelligence;
- Cost-effective and scalable solutions;
- Minimise workload and training burden;
- Secure data;
- Time saved through rapid data delivery;
- Automated analytics;
- U.S. ITAR-free software and systems.

sci-toolset.com

FM 614028: AS9100 & ISO9001

Rosemount Aerospace Limited, a Raytheon company, is Cyber Essentials Plus certified by the United Kingdom's National Cyber Security Centre.

Rosemount Aerospace Limited, a Raytheon company, operates a quality management system, which complies with the requirements of AS9100D (technically equivalent to EN9100:2018 and JISQ 9100:2016) and ISO 9001:2015, and is assessed in accordance with AS9104/1.

In addition, Raytheon has considerable experience with operating to the requirements of AQAP 2110, AQAP 2210 and AQAP 2105.

Raytheon

+44.1684.89.9700
Info-UK-ISR@rtx.com
rtx.com/raytheon

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