# DATASHEET

Threat Evaluation and Weapon Assignment (TEWA)

Cambridge Pixel's Threat Evaluation and Weapon Assignment (TEWA) system comprises a set of modules that support maintenance of asset and weapon databases, real-time threat evaluation and display, and operator-controlled flexible weapon assignment as a response to new threats.

TEWA may be used as part of a highly capable and cost-effective integrated air defence system, and when used in conjunction with Cambridge Pixel's world-leading target tracking capability, can support a wide range of legacy radars with analogue interfaces as well as more recent radars which provide a network-based source of video, plots or tracks.
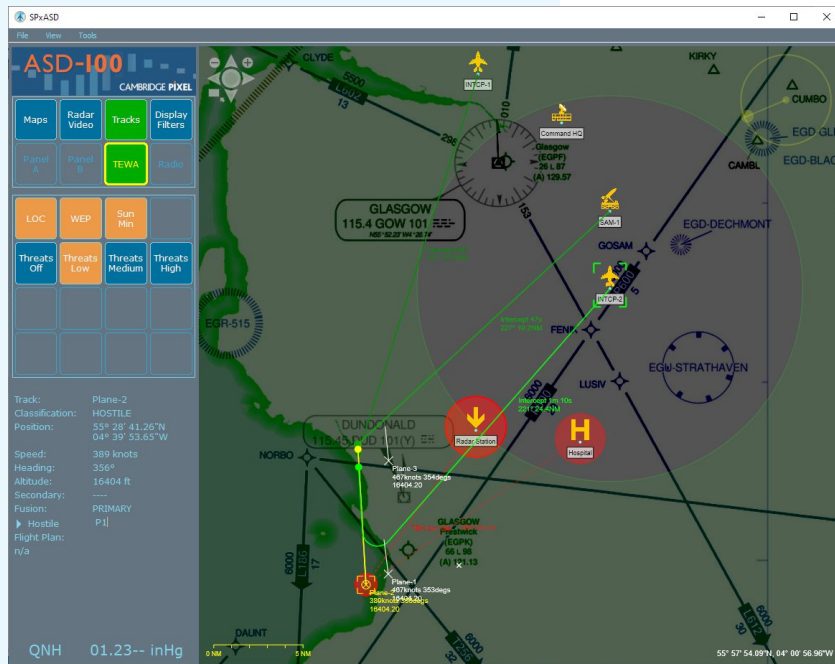
SPx Threat Processor accepts track reports from the SPx Fusion server, with the input to the fusion server being primary tracks from SPx Server, Asterix CAT-48 reports or tracks from other sources (converted using Cambridge Pixel's SPx Track Manager). These track reports may optionally be passed through SPx Track Manager as a first-stage filter to remove targets that are not of interest for subsequent threat evaluation.

The threat processor applies a number of algorithms to each target report in real-time to calculate an overall base threat score. This takes into account the user-assigned threat level (if any), any automatic classification from the tracker, the track speed, the track's origin and the target's manoeuvrability based on recent observations.

For each defined asset, per-track calculations based on range-to-track (RTT) and time-before-hit (TBH) are performed. The sum of these scores is combined with the priority to form a total asset score.

Features:

- Target motion reports as ASTERIX CAT-48
- Primary and ADS-B targets fused before evaluation
- Database of assets and associated priority
- Database of weapon types and availability
- Flexible and configurable threat scoring
- Threat classification by user
- Threat score based on target range, speed, automatic/user classification, origin, course deviation, manoeuvrability and asset priority
- Fully integrated with ASD-100 for simultaneous display of multiple threats and per-threat engagement for first-stage weapon assignment
- Weapon assignment based on threat dynamics and weapon capability and location
- Fully distributed architecture supports multiple operator displays and target engagement

ASD-100 receives the threat data and presents it as vectors from target to asset symbology with threat level indicated graphically and TBH as a label on vectors. The operator can then select a specific threat and view intercept calculations based on target position and dynamics, asset location and weapon capability and availability. A selection of potential interception strategies including frontal, stern, beam and cut-off is presented in the ASD-100 display, and for each strategy, the time to intercept is indicated. Based on this information, the operator can decide on the most appropriate intercept strategy to deploy.
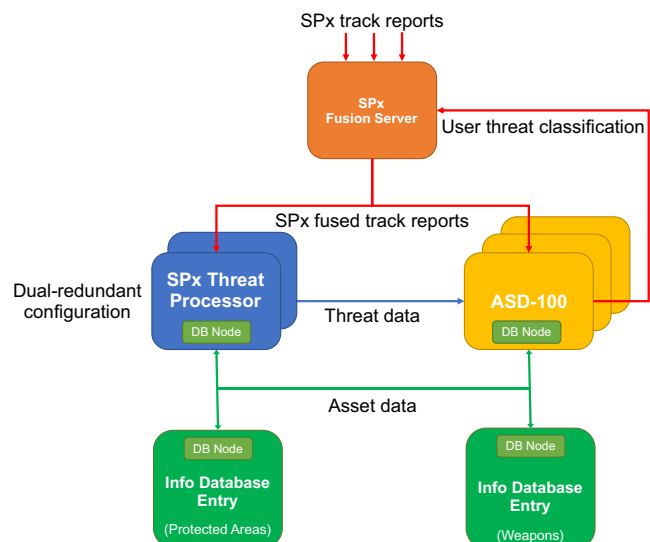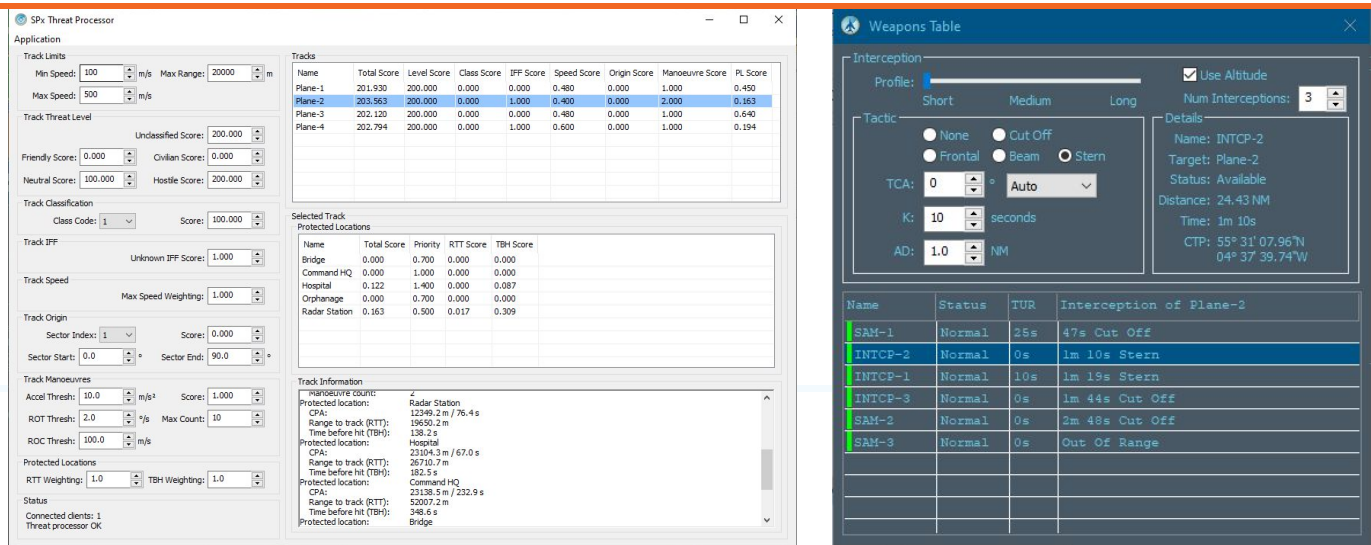
Assets and weapons are held in a custom distributed database implemented using Cambridge Pixel's Network Data Sharing capability. Any changes to objects in the database are immediately reflected to all other database entry instances and consumers of the data including ASD-100 and the threat processor. This provides a highly resilient architecture that is not dependent on the continued operation of specific nodes.


Specifications

Platform:	Windows 11
Configuration:	Configuration file read at start-up
Track input:	SPx format from Fusion
Number of Tracks:	Unlimited
Number of Assets:	Unlimited
Threat Factors:	Range
	Speed
	Manoeuvrability
	Sector of Origin
	User Classification
	Automatic Classification
	Range to Target
	Time Before Hit
Weapon Assignment Factors:	Location
	Readiness
	Range
	Performance Profile
	Weapon Fit (for Flying Assets)
Intercept Options:	Cut-off
	Frontal
	Beam
	Stern
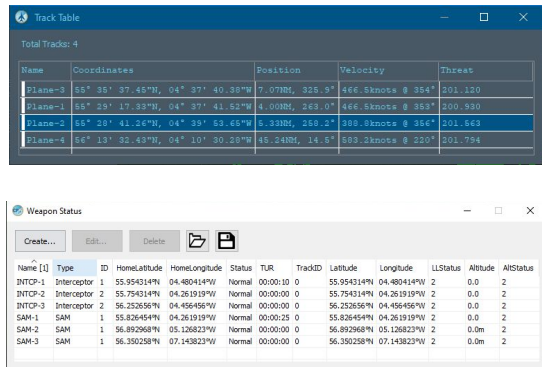
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