**Fig. 1a**

**Operation 10:** sampling all or any subset of the GNSS jamming indications values (e.g. all or any subset of g, G, p, P, r, R, y, Y, gap_c, drift_C), periodically at a suitable rate such as once a second (1 HZ rate).

↓

**Operation 20:** If (g > G or gap_c > drift_C) and (p < P and r < R and y < Y) then add the current position of the vehicle to a table of jammed positions at index i and go to operation 30, otherwise discard the current position of the vehicle go to operation 10.

↓

**Operation 30:** compute the CIntensity (Current intensity, which indicates the level or intensity of jamming encountered at the vehicle's current position). This may be computed using the following formula: CIntensity = (Wgap_c * gap_c + Wg * g)) of the current position.

Add CIntensity to the table of jammed positions at index i.

↓

**Operation 40:** compute the average, ACIntensity, of the most recent N CIntensity values.

Add ACIntensity to the table of jammed positions at index i. Classify the Current vehicle position jamming classification according to the ACIntensity e.g. as a HARD or MED or LOW jamming point - based on expert knowledge to define those levels. Add the classification (e.g. HARD/MED/LOW) to the table of jammed positions at index i.

↓

**Operation 50:** Compute the position of the vehicle. If the vehicle is jammed:

- New position =

= last reliable vehicle position + ((velocity in X, Y and Z axis) * delta time)

- Last reliable vehicle position = New position

Else, last reliable vehicle position is the vehicle position according to the blended solution

**Operation 60:** read the direction of the jamming from the vehicle's CRPA antenna. If no CRPA antenna is available, long term memory, which stores data from the past e.g. data collected when a CRPA antenna was available, may be used, and/or using jammer position from other vehicles. Compute the direction vector

**Operation 70**: Build a "jammed areas map" which maps jammed areas.

↓

**Operation 80:** Compute the range (distance) of the vehicle from the jammer

↓

**To operation 90 in Fig. 1b**

**Fig. 1b**

**From operation 80 in Fig. 1a**

↓

**Operation 90:** Compute the position of the jammer by using the vehicle position and the range.

↓

**Operation 100:** Define if a jammer position is a new one or belongs to other jammers in the area.

↓

**Operation 110:** Compute distance between current jammer position and central tendency e.g. median of previous jammer position. If distance is over threshold e.g. exceeds half the jammer range, disregard, else continue

↓

**Operation 120:** Compute a geometrical median function of the jammer position e.g. as computed in operation 90 and/or jammer positions from long-term memory and/or jammer position from other vehicles, with the previous geometrical median in order to derive the jammer's updated position. If at least a threshold amount of estimated jammer positions in the past are located within a suitable typically predetermined vicinity of the current computed median, validate assumption that the jammer's exact position is the geometrical median and go to operation 140.

↓

**Operation 130:** Store the geometrical median jammer position, if any, computed in operation 120 in a repository for the next iteration which begins with operation 10

↓

**Operation 140:** The jammer's exact position may be published to the user (operator/other vehicles) e.g. after a predefined percentage of the last N measurements complies with the terms (if statement) in operation 120. Alternatively, or in addition, average standard deviation of the last N measurements may be published as a quality criterion. Jammed areas map may be updated accordingly.

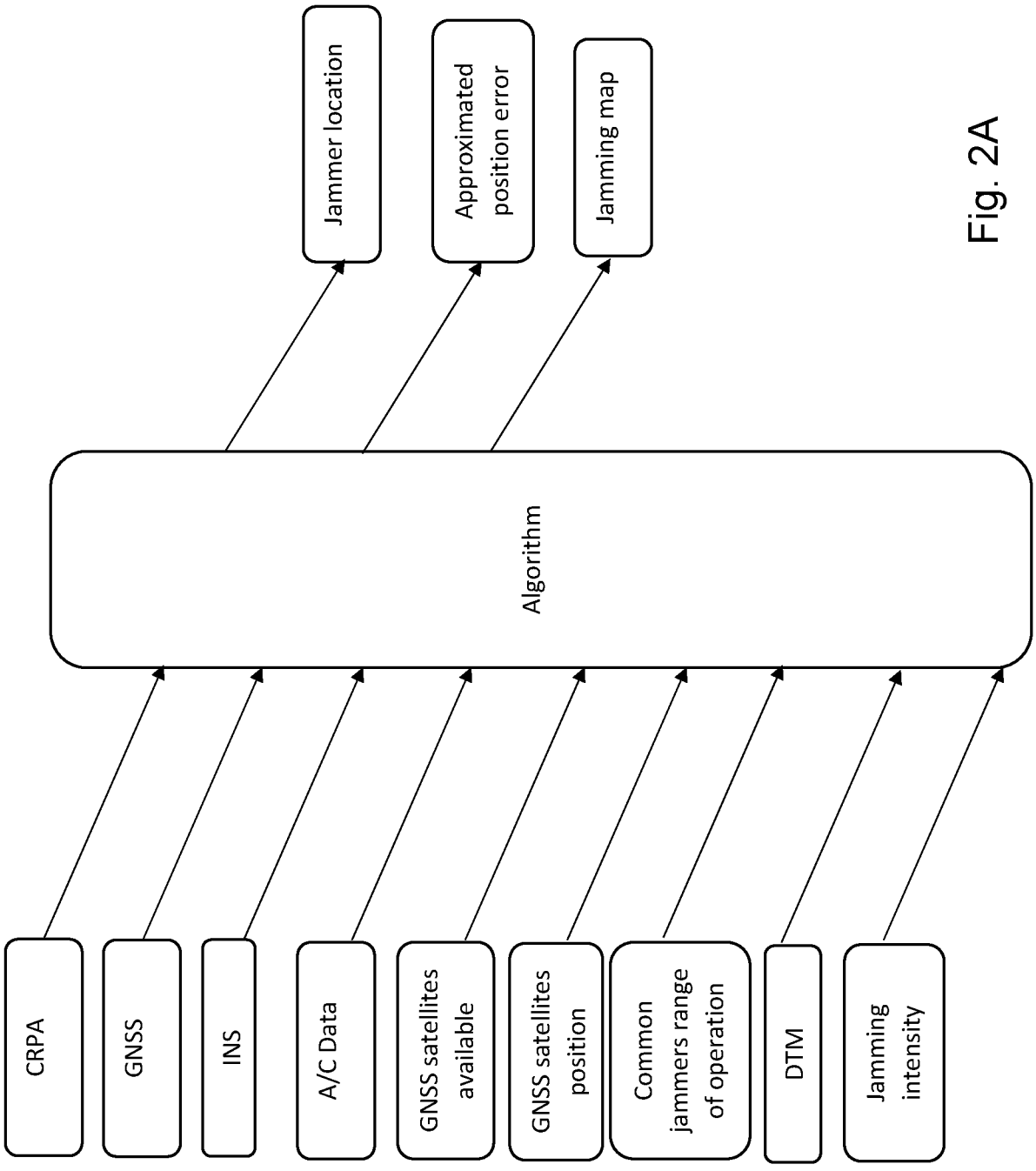

CRPA
GNSS
INS
A/C Data
GNSS satellites available
GNSS satellites position
Common jammers range of operation
DTM
Jamming intensity
Algorithm
Jammer location
Approximated position error
Jamming map

Fig. 2A

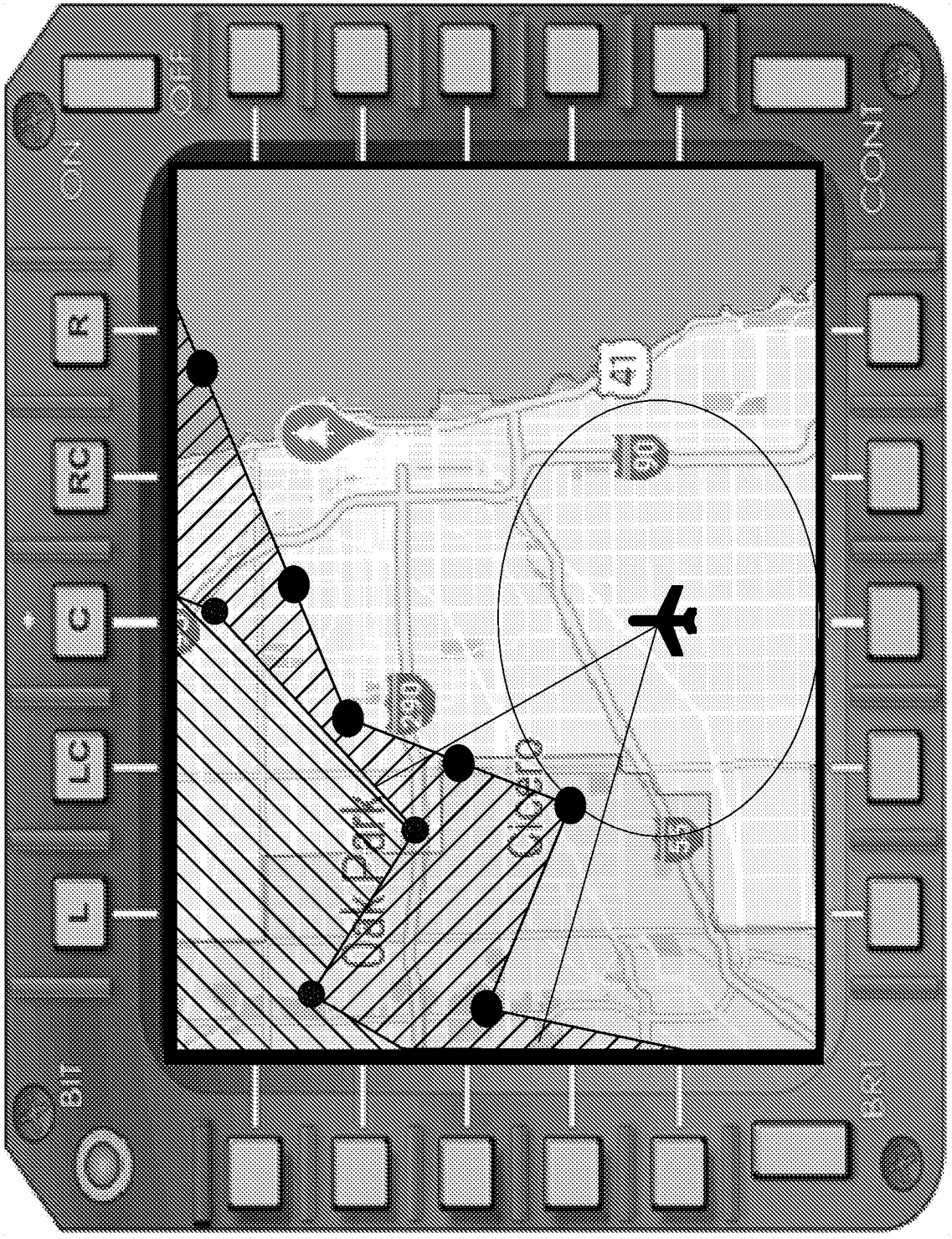



Fig. 2B

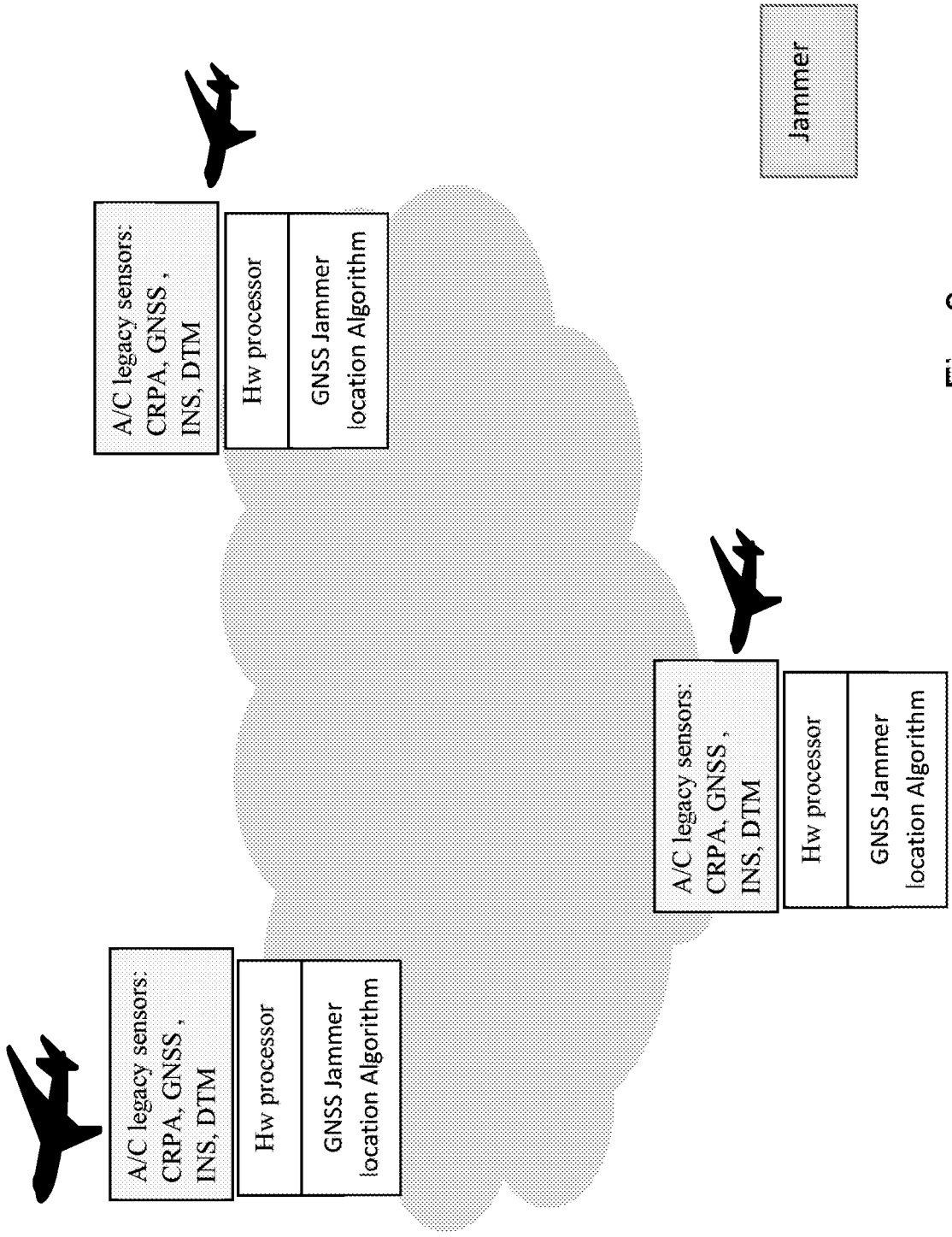

A/C legacy sensors: CRPA, GNSS , INS, DTM
Hw processor
GNSS Jammer location Algorithm
A/C legacy sensors: CRPA, GNSS , INS, DTM
Hw processor
GNSS Jammer location Algorithm
A/C legacy sensors: CRPA, GNSS , INS, DTM
Hw processor
GNSS Jammer location Algorithm
Jammer

Fig. 3