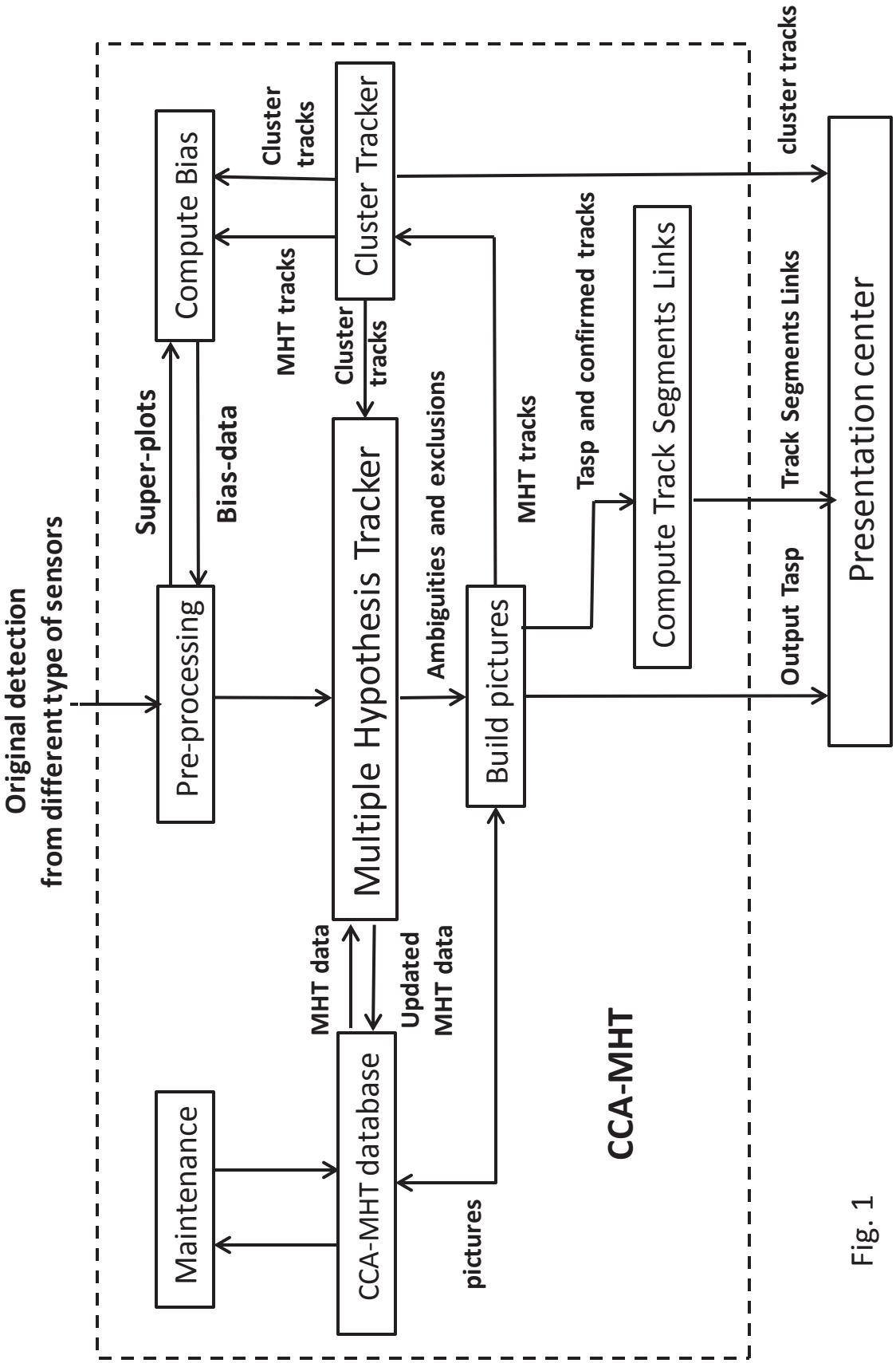

Original detection
from different type of sensors
Pre-processing
Super-plots
Bias-data
Compute Bias
Cluster
tracks
Cluster Tracker
cluster tracks
MHT tracks
Cluster
tracks
Multiple Hypothesis Tracker
Ambiguities and exclusions
Build pictures
MHT tracks
Tasp and confirmed tracks
Compute Track Segments Links
Track Segments Links
Output Tasp
Presentation center
MHT data
Updated
MHT data
CCA-MHT database
pictures
Maintenance
CCA-MHT

Fig. 1

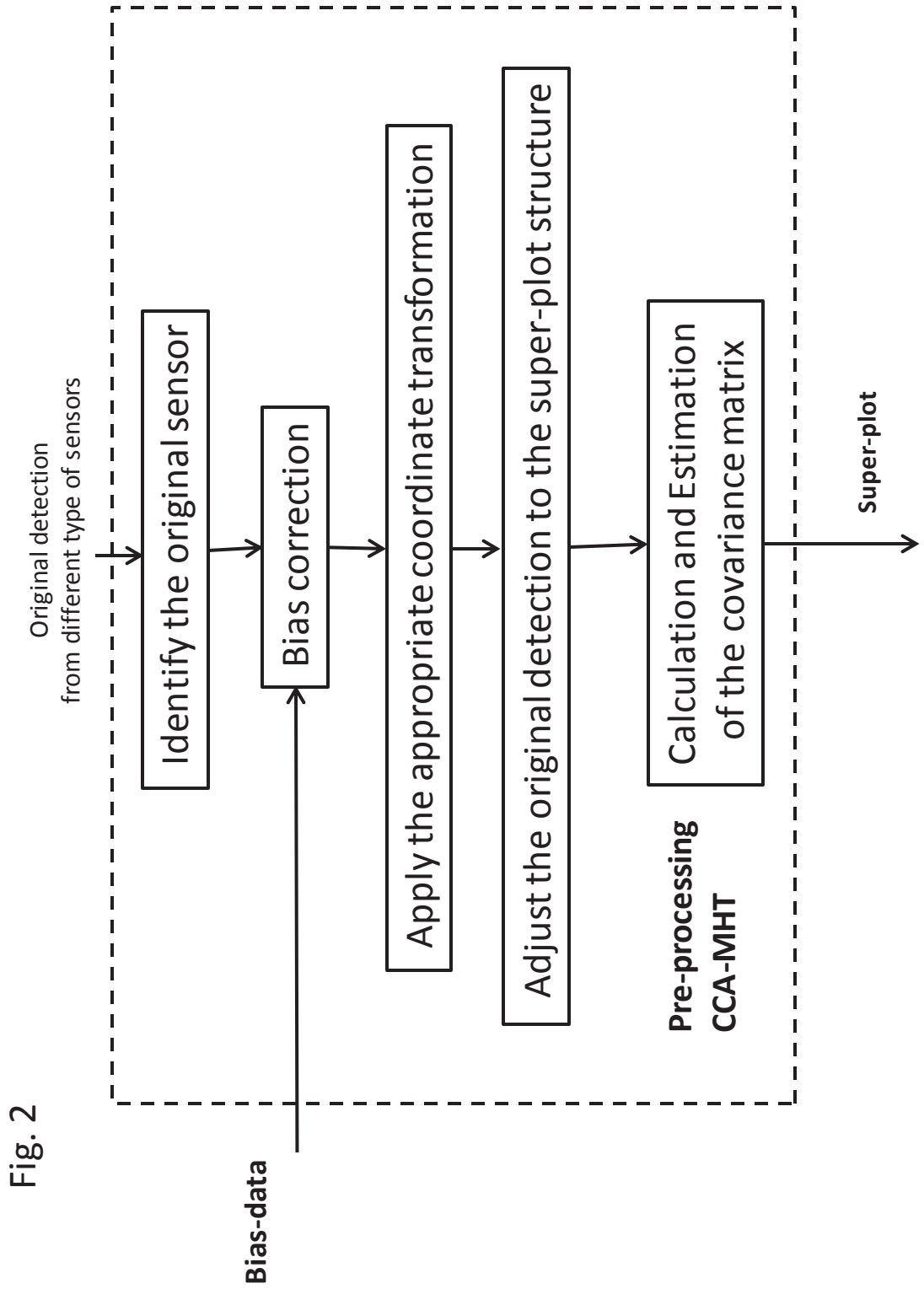

Original detection
from different type of sensors
Identify the original sensor
Bias correction
Apply the appropriate coordinate transformation
Adjust the original detection to the super-plot structure
Calculation and Estimation
of the covariance matrix
Pre-processing
CCA-MHT
Super-plot
Bias-data

Fig. 2

Fig. 3

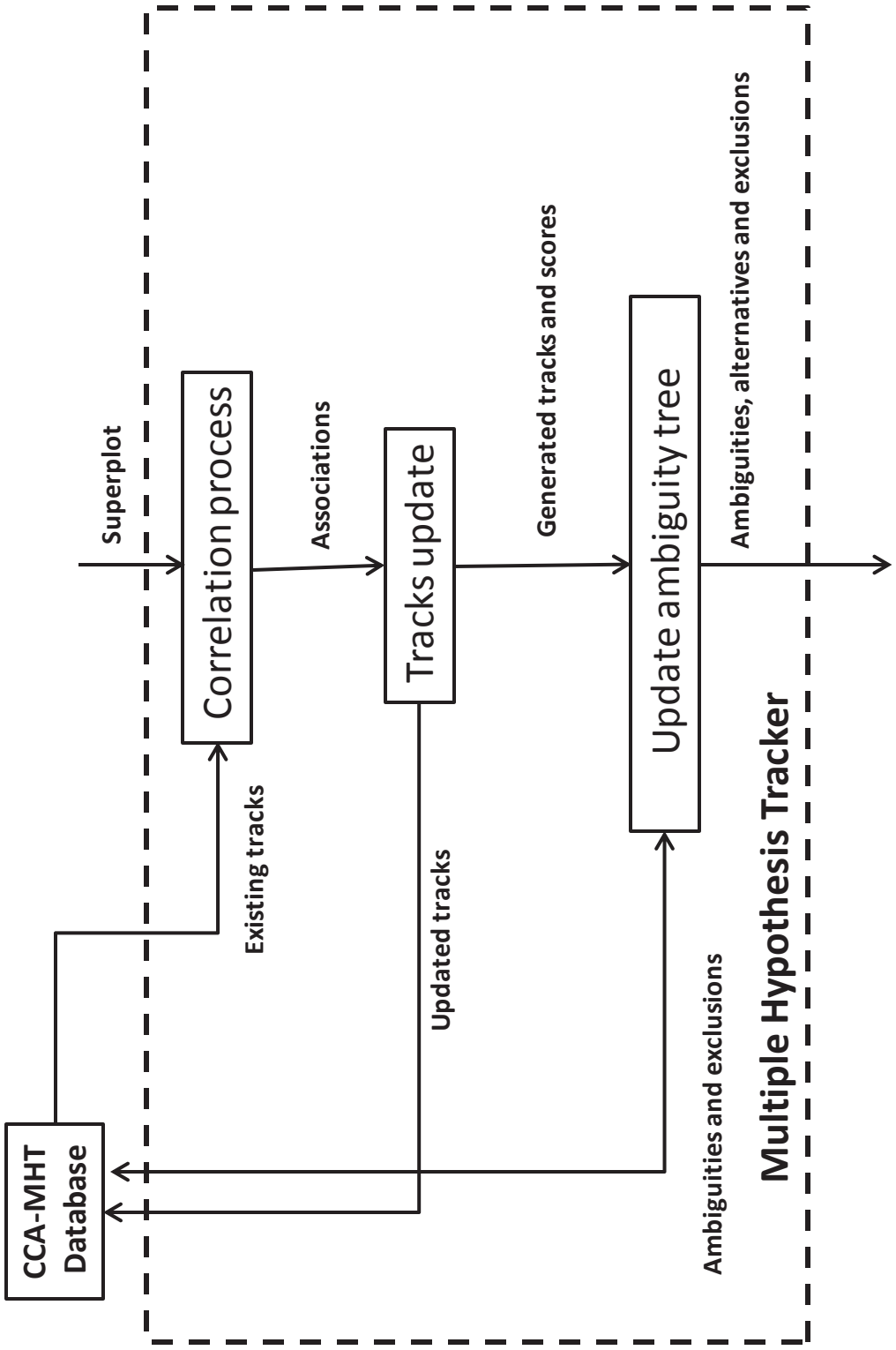
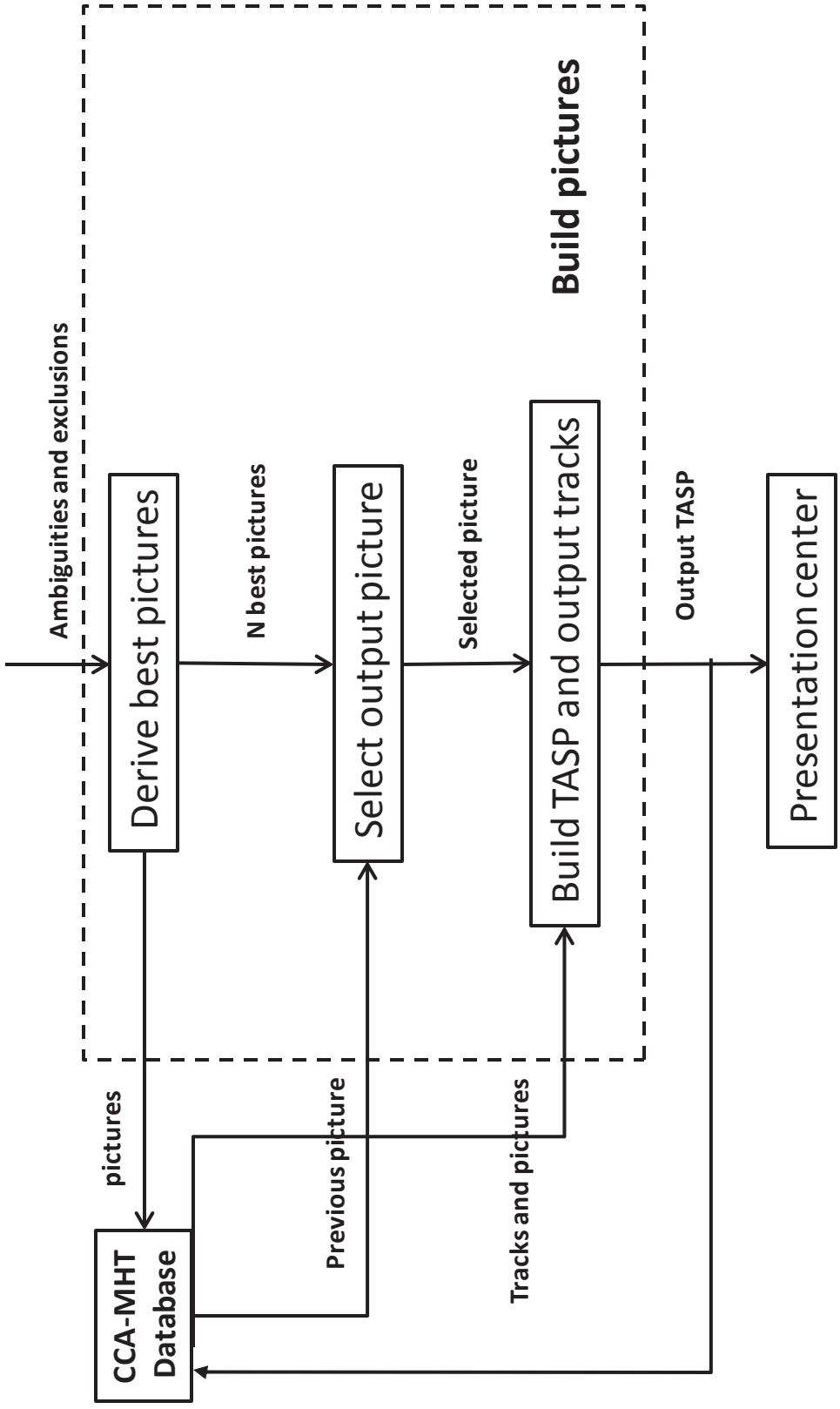

Multiple Hypothesis Tracker
CCA-MHT Database
Superplot
Correlation process
Associations
Tracks update
Generated tracks and scores
Update ambiguity tree
Ambiguities, alternatives and exclusions
Existing tracks
Updated tracks
Ambiguities and exclusions

Fig. 4


Build pictures
Ambiguities and exclusions
Derive best pictures
N best pictures
Select output picture
Selected picture
Build TASP and output tracks
Output TASP
Presentation center
pictures
Previous picture
Tracks and pictures
CCA-MHT Database

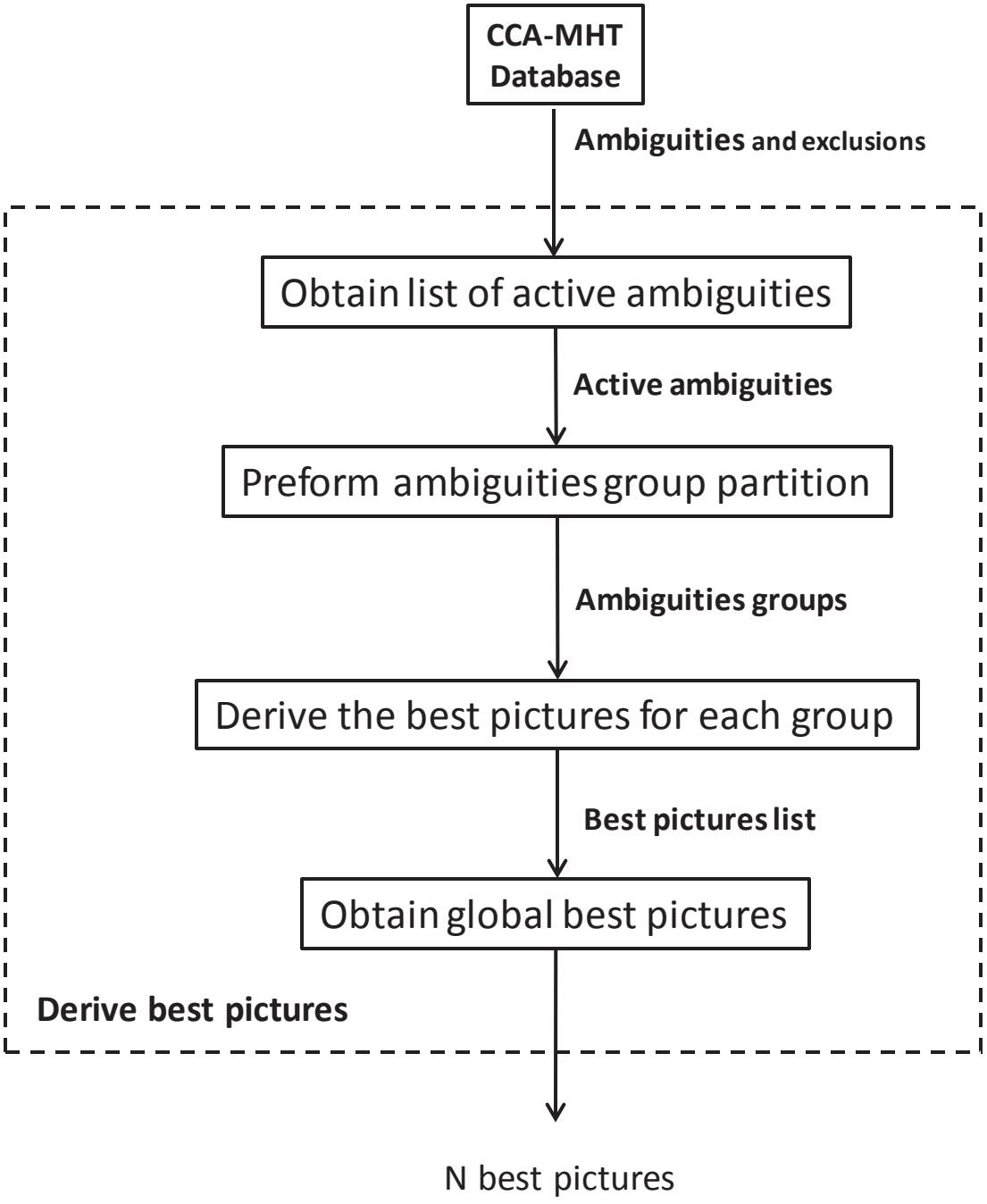

CCA-MHT Database
Ambiguities and exclusions
Obtain list of active ambiguities
Active ambiguities
Preform ambiguities group partition
Ambiguities groups
Derive the best pictures for each group
Best pictures list
Obtain global best pictures
Derive best pictures
N best pictures

Fig. 5

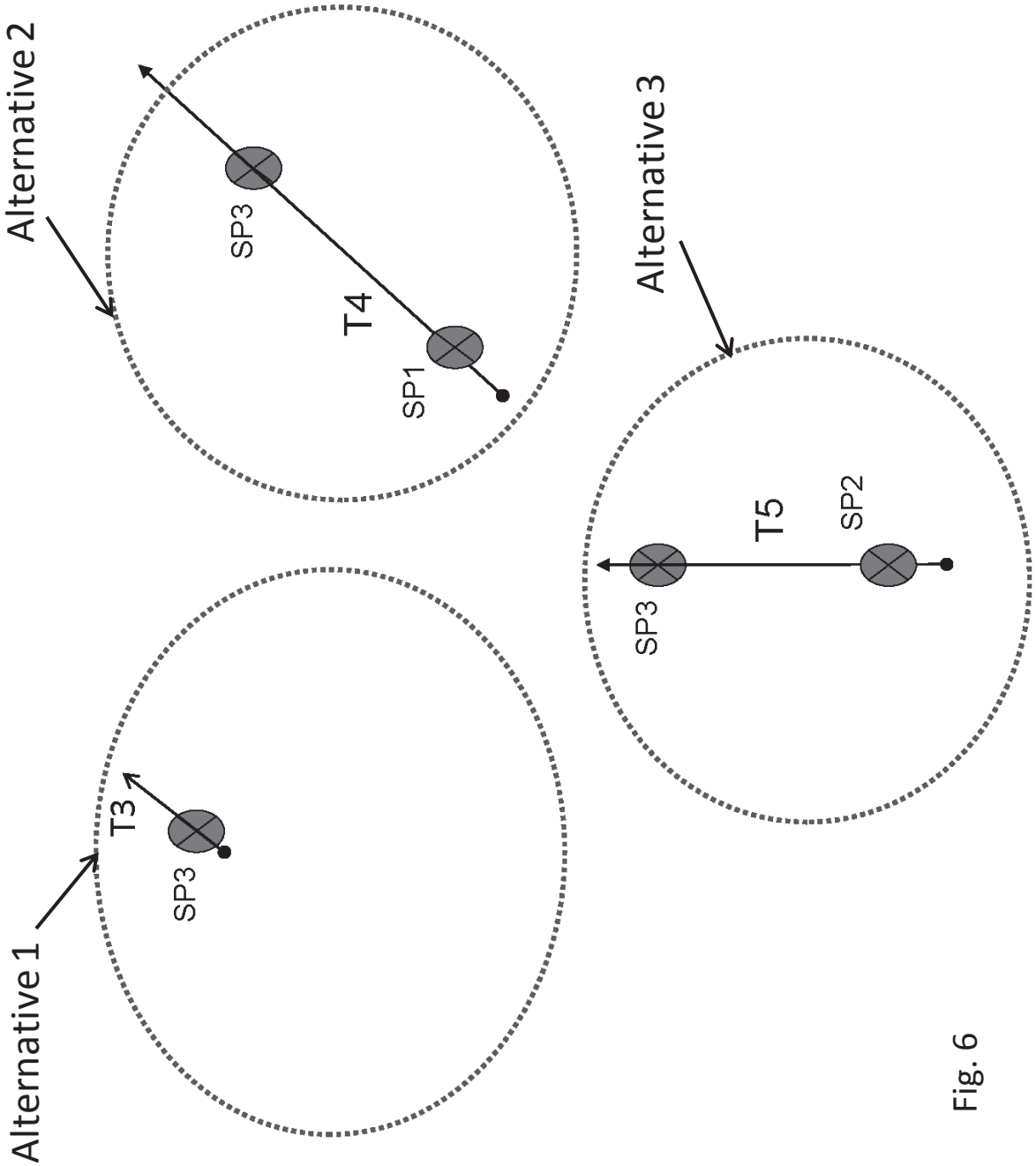
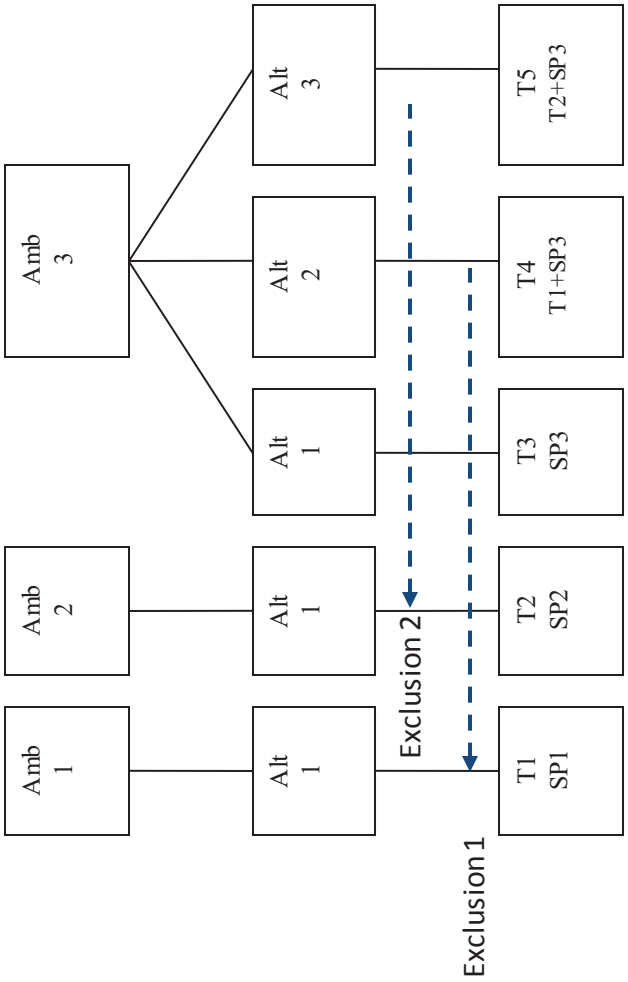

Alternative 1
T3
SP3
Alternative 2
SP3
T4
SP1
Alternative 3
SP3
T5
SP2

Fig. 6

Fig. 7


Amb 1
Amb 2
Amb 3
Alt 1
Alt 1
Alt 1
Alt 2
Alt 3
T1 SP1
T2 SP2
T3 SP3
T4 T1+SP3
T5 T2+SP3
Exclusion 2
Exclusion 1

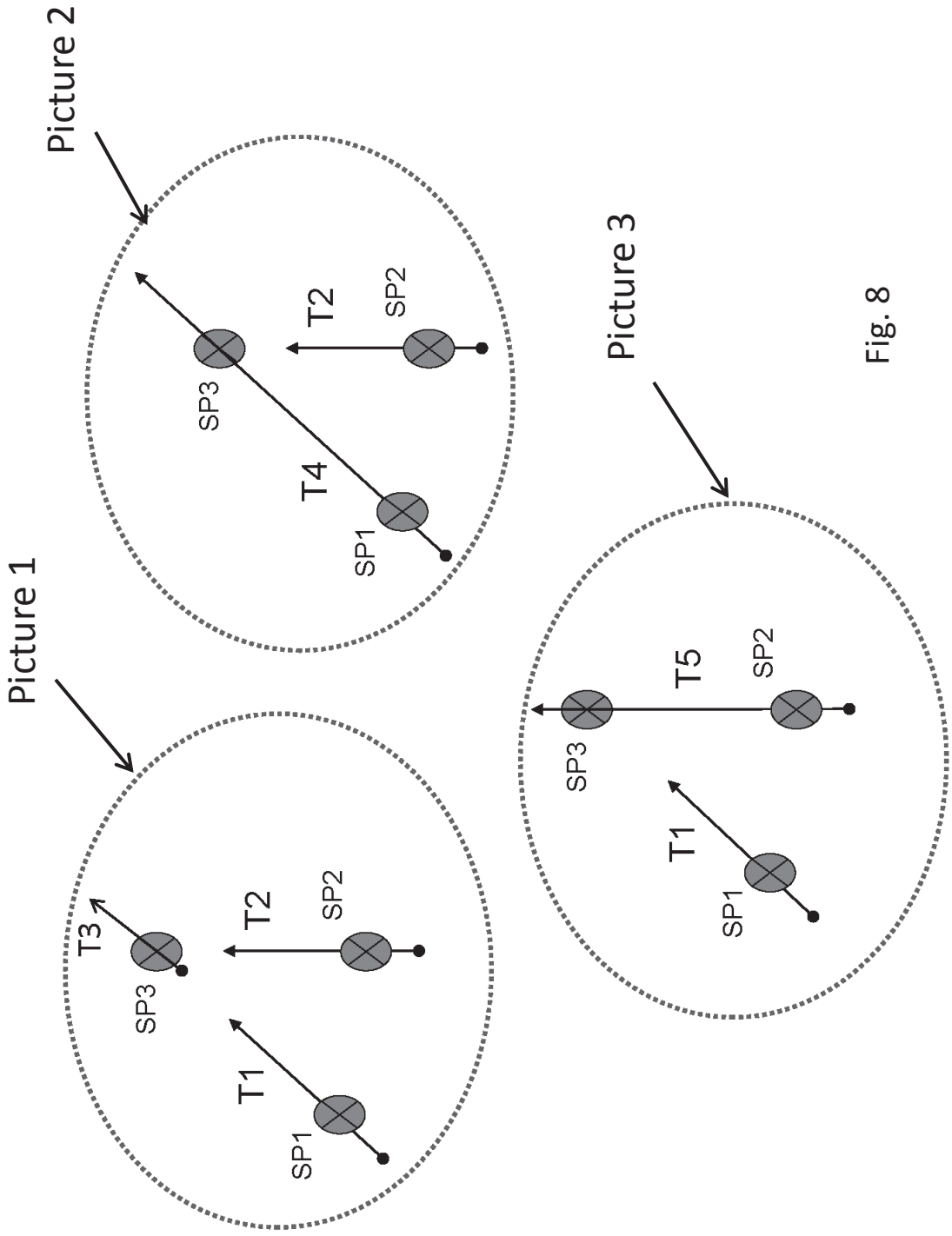

Picture 1
T3
SP3
T2
SP2
T1
SP1
Picture 2
T2
SP2
SP3
T4
SP1
Picture 3
T5
SP2
SP3
T1
SP1

Fig. 8

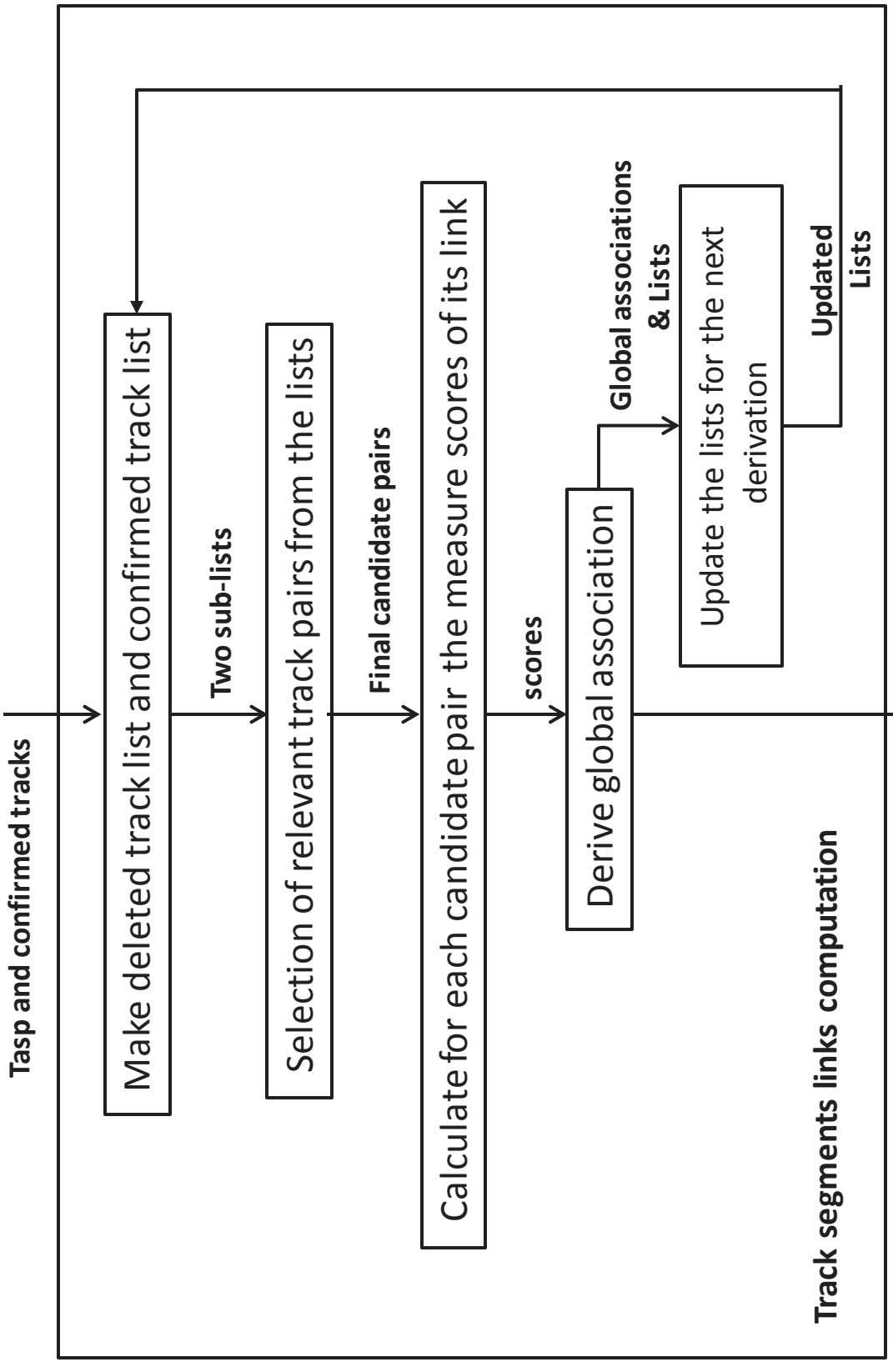

Tasp and confirmed tracks
Make deleted track list and confirmed track list
Two sub-lists
Selection of relevant track pairs from the lists
Final candidate pairs
Calculate for each candidate pair the measure scores of its link
scores
Derive global association
Global associations & Lists
Update the lists for the next derivation
Updated Lists
Track segments links computation
Track Segments Links

Fig. 9

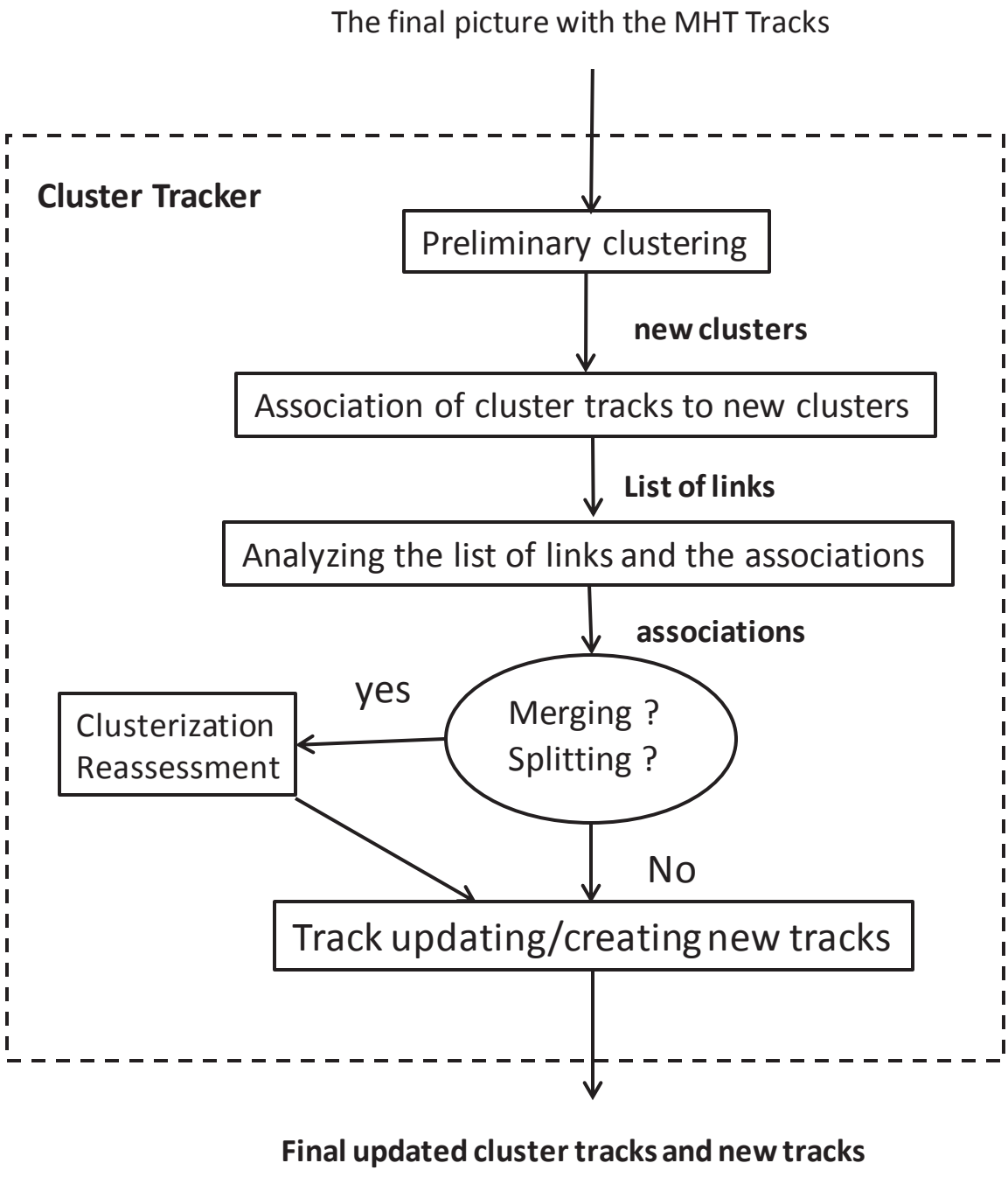

The final picture with the MHT Tracks
Cluster Tracker
Preliminary clustering
new clusters
Association of cluster tracks to new clusters
List of links
Analyzing the list of links and the associations
associations
yes
Merging ?
Splitting ?
Clusterization
Reassessment
No
Track updating/creating new tracks
Final updated cluster tracks and new tracks

Fig. 10

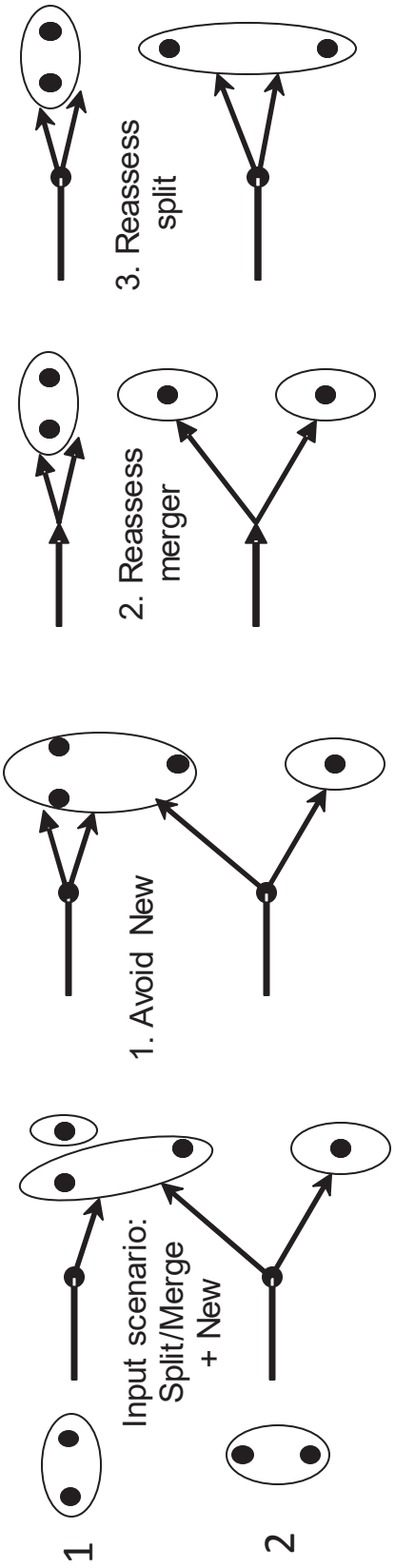

1
2
Input scenario:
Split/Merge
+ New
1. Avoid New
2. Reassess
merger
3. Reassess
split

Fig. 11

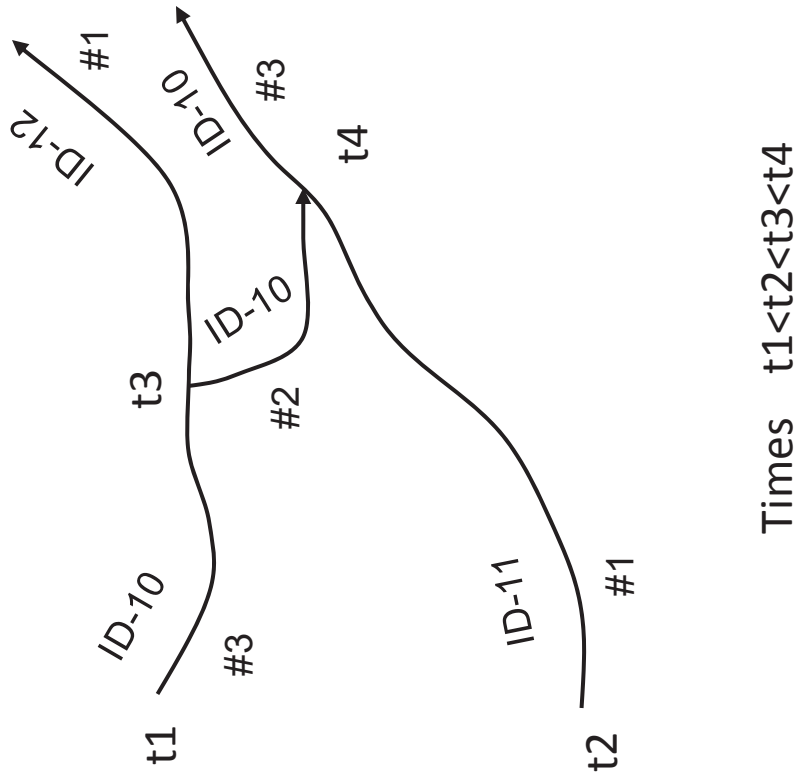


Fig. 12

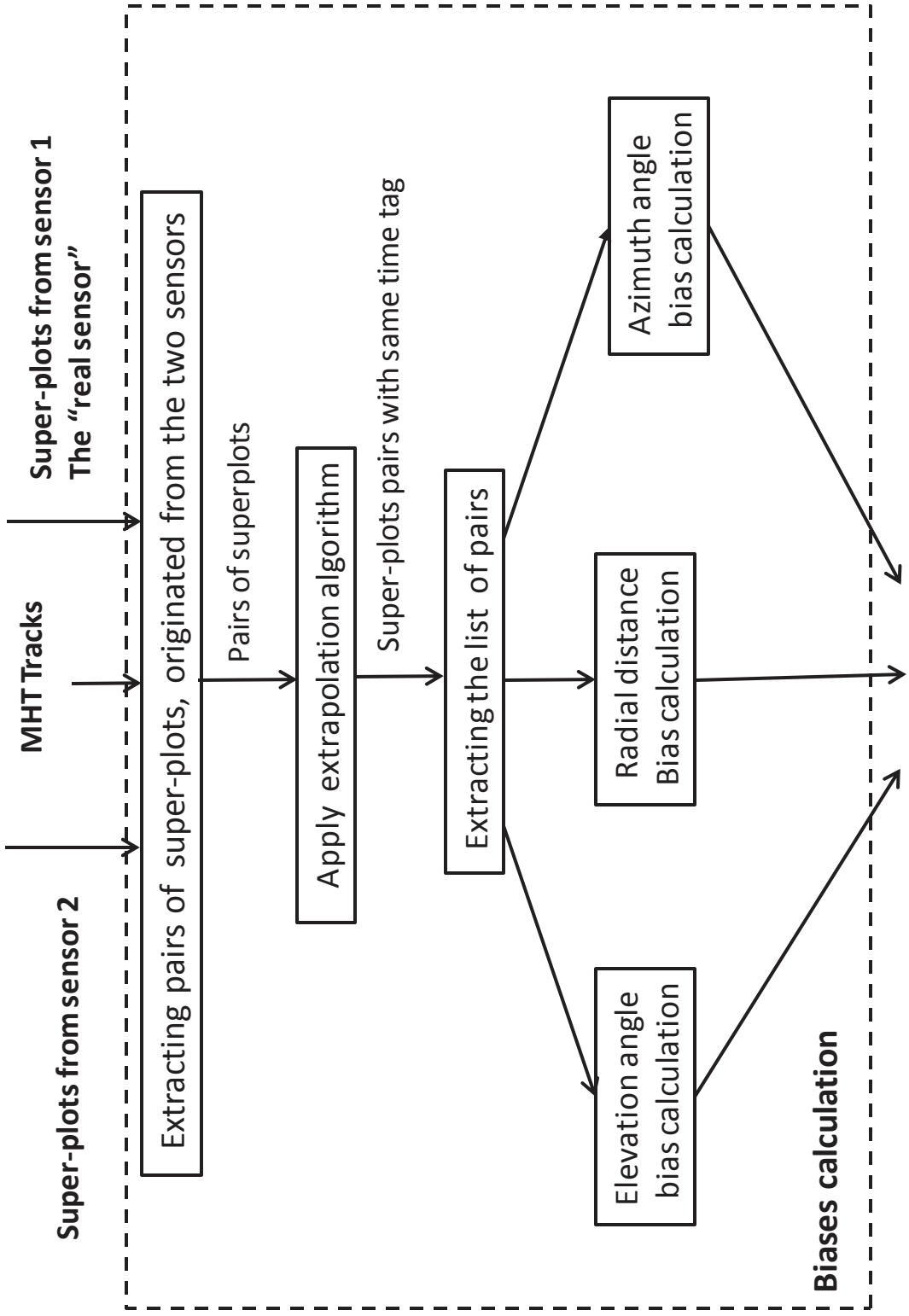

Super-plots from sensor 2
MHT Tracks
Super-plots from sensor 1
The "real sensor"
Extracting pairs of super-plots, originated from the two sensors
Pairs of superplots
Apply extrapolation algorithm
Super-plots pairs with same time tag
Extracting the list of pairs
Azimuth angle bias calculation
Radial distance Bias calculation
Elevation angle bias calculation
Biases calculation
The optimal bias values

Fig. 13

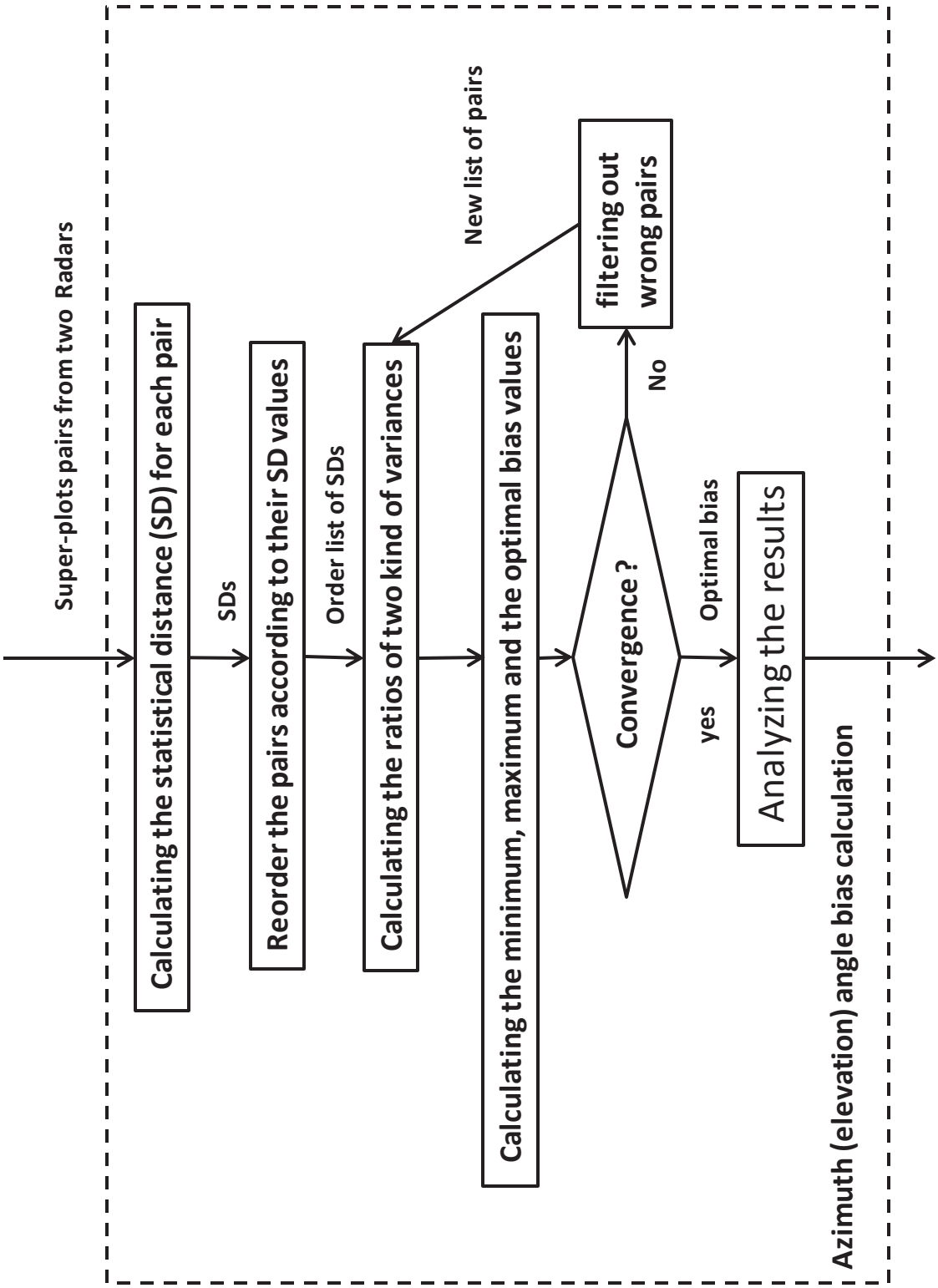

Super-plots pairs from two Radars
Calculating the statistical distance (SD) for each pair
SDs
Reorder the pairs according to their SD values
Order list of SDs
Calculating the ratios of two kind of variances
Calculating the minimum, maximum and the optimal bias values
Convergence ?
No
filtering out wrong pairs
New list of pairs
yes
Optimal bias
Analyzing the results
Azimuth (elevation) angle bias calculation
The optimal bias value

Fig. 14

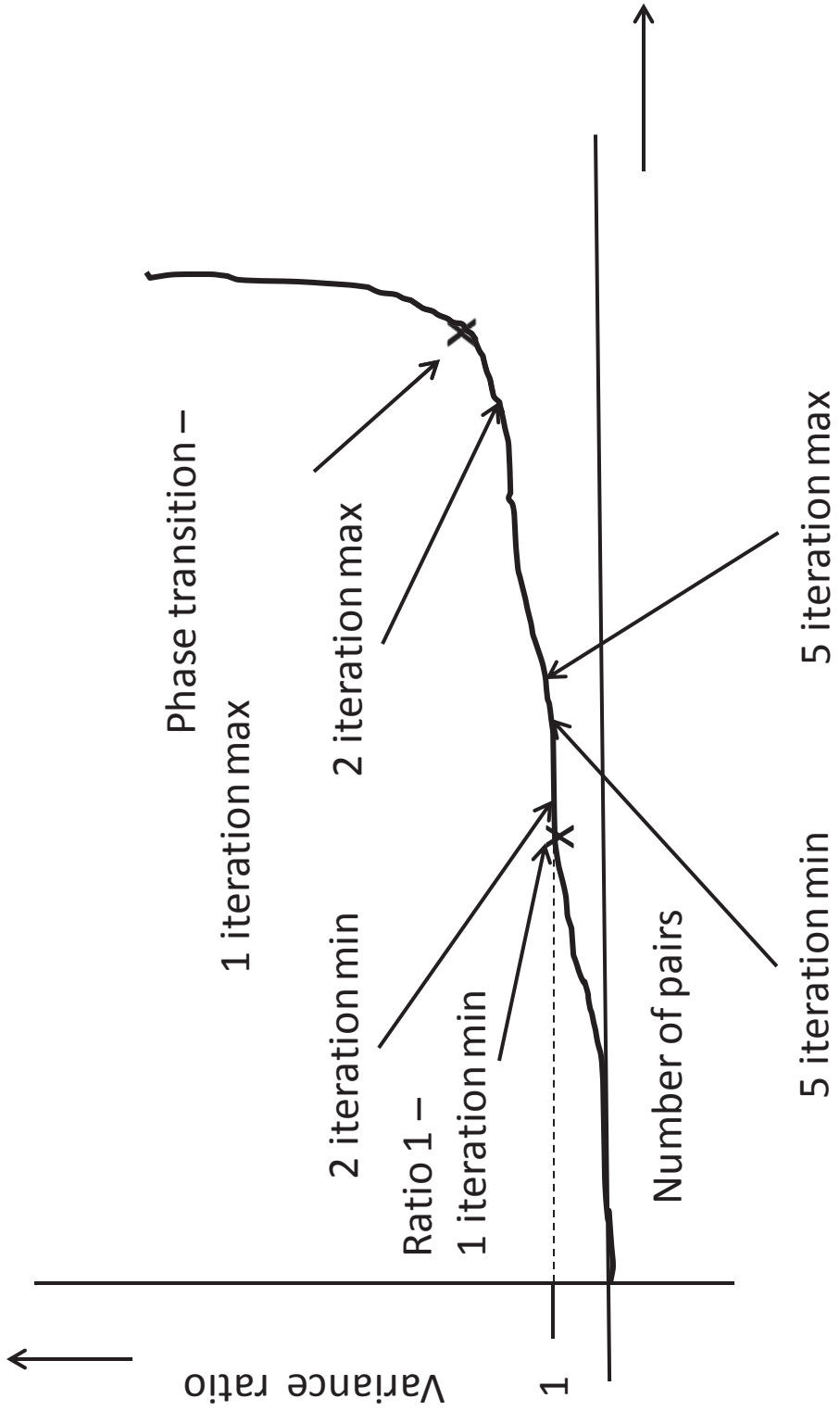

Variance ratio
1
Number of pairs
Phase transition –
1 iteration max
2 iteration max
5 iteration max
2 iteration min
Ratio 1 –
1 iteration min
5 iteration min

Fig. 15

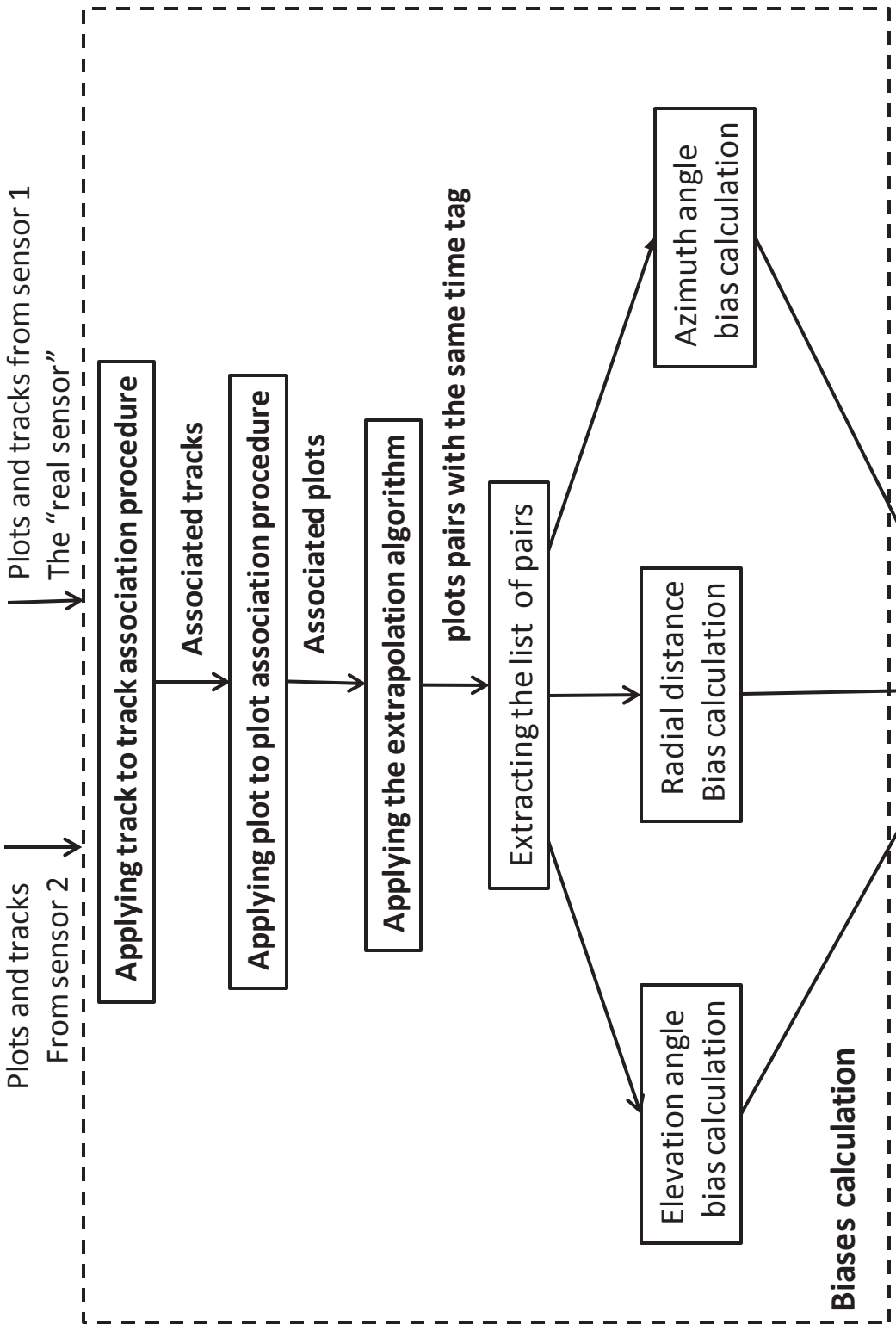

Plots and tracks from sensor 1
The "real sensor"
Plots and tracks
From sensor 2
Applying track to track association procedure
Associated tracks
Applying plot to plot association procedure
Associated plots
Applying the extrapolation algorithm
plots pairs with the same time tag
Extracting the list of pairs
Azimuth angle
bias calculation
Radial distance
Bias calculation
Elevation angle
bias calculation
The optimal bias values
Biases calculation

Fig. 16